LIPPINCOTT LIBRARY
MAY 10 1949

April, 1949

EDISON ELECTRIC INSTITUTE BULLETIN

		Page
Program of the 17th Annual EEI Convention Is Announced		97
Sales Conference Speakers Urge More Aggressive Selling		105
"Selling Returns to the Front"	ERNEST R. ACKER	109
Television—A Load Builder	F. A. COMPTON	111
Market Analysis to Build Future Sales	MAXWELL COLE	115
Coordinating the Use of Standard Specifications for Distribution Construction	DAVID BURNS	119
Recent Inductive Coordination Activities		123
EEI Study Reveals Relationship Between "Peak Loads" and Sales of Electricity		125
Personals		126
Conventions and Meetings		128

PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

January, 1948-1949

SOURCE AND DISPOSAL OF ENERGY—MONTH OF JANUARY

	1949	1948	%
GENERATION* (Net)			
By Fuel Burning Plants	17,803,133,000	17,514,364,000	+ 1.6
By Water Power Plants	7,767,037,000	6,443,980,000	+20.5
Total Generation	**25,570,170,000**	**23,958,344,000**	**+ 6.7**
Add—Net Imports Over International Boundaries	100,500,000	83,500,000	+20.4
Less—Company Use	131,801,000	134,474,000	− 2.0
Less—Energy Used by Producer	376,669,000	408,941,000	− 7.9
Net Energy for Distribution	**25,162,200,000**	**23,498,429,000**	**+ 7.1**
Losses and Unaccounted for	3,331,368,000	3,231,012,000	+ 3.1
Sales to Ultimate Customers	**21,830,832,000**	**20,267,417,000**	**+ 7.7**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of January 31st			
Residential or Domestic	33,693,611	31,758,231	+ 6.1
Rural (Distinct Rural Rates)	1,674,888	1,537,073	+ 9.0
Commercial or Industrial:			
Small Light and Power	5,134,368	4,975,410	+ 3.2
Large Light and Power	225,336	192,648	+17.0
Other Customers	142,370	136,325	+ 4.4
Total Ultimate Customers	**40,870,573**	**38,599,687**	**+ 5.9**
KILOWATTHOUR SALES—During Month of January			
Residential or Domestic	5,424,341,000	4,776,755,000	+13.6
Rural (Distinct Rural Rates)	459,075,000	384,073,000	+19.5
Commercial or Industrial:			
Small Light and Power	3,833,836,000	3,569,628,000	+ 7.4
Large Light and Power	10,646,528,000	9,990,392,000	+ 6.6
Street and Highway Lighting	266,121,000	247,507,000	+ 7.5
Other Public Authorities	559,871,000	547,520,000	+ 2.3
Railways and Railroads:			
Street and Interurban Railways	358,683,000	437,293,000	−18.0
Electrified Steam Railroads	236,413,000	247,822,000	− 4.6
Interdepartmental	45,964,000	66,427,000	−30.8
Total to Ultimate Customers	**21,830,832,000**	**20,267,417,000**	**+ 7.7**
Revenue from Ultimate Customers	**$398,486,500**	**$362,407,000**	**+10.0**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended January 31st			
Kilowatthours per Customer	1,575	1,451	+ 8.5
Average Annual Bill	$47.25	$44.69	+ 5.7
Revenue per Kilowatthour	3.00¢	3.08¢	− 2.6

(*) By courtesy of the Federal Power Commission.

Vol. 17, No. 4, EDISON ELECTRIC INSTITUTE BULLETIN; published monthly. Entered as second-class matter Aug. 17, 1933, at the post office at Philadelphia 2, Pa., under the act of March 3, 1879. Publication office, 56th and Chestnut Sts., Philadelphia 39, Pa. Editorial office, 420 Lexington Ave., New York 17, N. Y. Subscription rate $2.00 per year in the United States; $3.00 per year in foreign countries.

The Edison Electric Institute does not assume responsibility for, nor necessarily endorse or approve, statements made by contributors to the BULLETIN.

EDISON ELECTRIC INSTITUTE BULLETIN

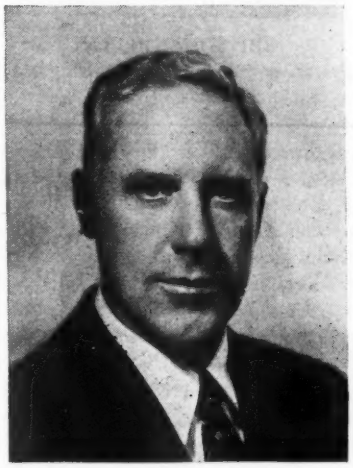
Volume 17 APRIL, 1949 No. 4

Program of the 17th Annual EEI Convention Is Announced

A WIDE range of topics important to the future of the electric industry will be surveyed in major addresses by twenty-four recognized leaders in the business world at EEI's annual Convention in Atlantic City, May 31 to June 2.

Section 11 of the Holding Company Act, socialized and free-enterprise electricity, increased sales efforts, the rate situation, cost control, government supervision, financing, and investor, public and employee relations will be among the subjects to be dealt with at the three general sessions in the Atlantic City Convention Hall. President Acker will preside at these sessions, and, after delivering the Convention's opening address, will introduce the speakers at each general session.

These include the Hon. Edmond M. Hanrahan, Chairman, Securities and Exchange Commission; James H. McGraw, Jr., President and Chairman, McGraw-Hill Publishing Company; James H. Jewell, Manager of Apparatus Sales, Westinghouse Electric Corporation; Philip Sporn, President, American Gas and Electric Service Corporation; Charles E. Wilson, President, General Electric Company; Harold H. Young, Partner, Eastman, Dillon and Company; Tom P. Walker, Vice President, Irving Trust Company; Morris Sayre, President, Corn Products Refining Company, and Chairman of the Board, National Association of Manufacturers; and Kinsey M. Robinson, President, The Washington Water Power Company.

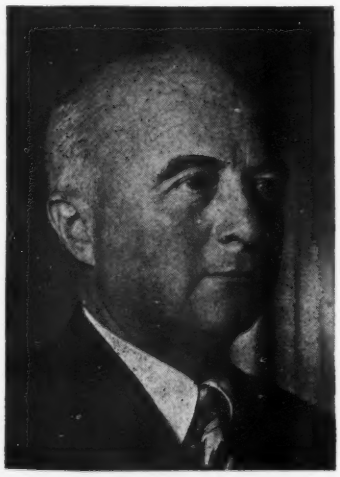


ERNEST R. ACKER
President of the Edison Electric Institute

The four parallel sessions, which will be held in the Haddon Hall Hotel on Wednesday and Thursday afternoons, have been carefully planned to give executives attending them a wider knowledge of specific problems in the fields of engineering, rates, accounting, and commercial activities.

The engineering session, presided over by E. W. Dillard, Chairman, EEI Engineering Division General Committee, will have as speakers Walker Cisler, Executive Vice President of The Detroit Edison Company; A. C. Monteith, Vice President, Westinghouse Electric Corporation; C. W. E. Clarke, Vice President and Consulting Engineer, United Engineers and Constructors, Inc.; and T. J. Brosnan, Distribution Engineer, Buffalo Niagara Electric Corporation, and Chairman of EEI's Transmission and Distribution Committee.

S. W. Andrews, Rate Engineer of American Gas and Electric Service Corporation, will preside over the session on rates in his capacity as Chairman of the EEI Rate Research Committee, and will also deliver the first address. Speakers include: L. R. Lefferson, Manager, Rate Department, Ebasco Services Inc., and Paul W. McQuillen, Partner, Sul-



HON. EDMOND M. HANRAHAN
Chairman, Securities and Exchange Commission

JAMES H. McGRAW, JR.
President, McGraw-Hill Publishing Co.

JAMES H. JEWELL
Manager of Apparatus Sales, Westinghouse Electric Corp.

PHILIP SPORN
President, American Gas & Electric Service Corp.

CHARLES E. WILSON
President, General Electric Co.

livan and Cromwell, New York, N. Y.

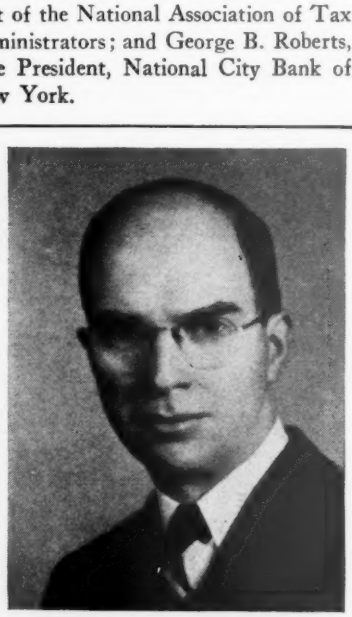
At the accounting session, under the guidance of Allan G. Mitchell, Chairman, EEI Accounting Division Executive Committee, delegates will hear discussions of finance and economics by Harold H. Scaff, Vice President, Ebasco Services Inc.; William W. Bodine, Financial Vice President, The Penn Mutual Life Insurance Company, and former president of the United Gas Improvement Company; C. E. Glander, Tax Commissioner of Ohio and President of the National Association of Tax Administrators; and George B. Roberts, Vice President, National City Bank of New York.

Featured speakers at the commercial session, presided over by Harry Restofski, Chairman of the EEI Commercial Division General Committee, will be Edwin Vennard, Vice President, Middle West Service Company; D. C. McKee, President and General Manager, Empire District Electric Company; and Merrill E. Skinner, Vice President, Union Electric Company of Missouri.

First General Session

Giving the delegates time to complete their registration, the first general session will begin on Tuesday afternoon, May 31, at 2:30. In keeping with Convention tradition, President Acker will make the opening address. The Hon. Edmond M. Hanrahan, Chairman of the Securities and Exchange Commission, will then discuss the SEC and the electric industry, giving particular attention to the industry's equity financing and to progress under Section 11 of the Holding Company Act.

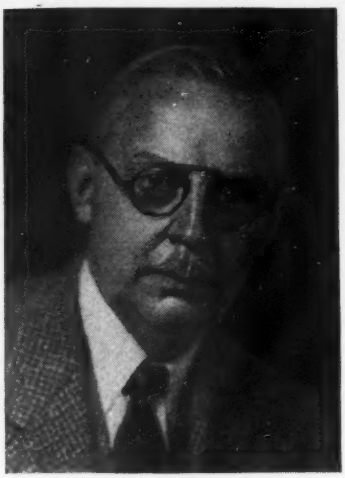
"You Can Lose Only Once," is the title James H. McGraw, Jr., President of McGraw-Hill Publishing Company, has given to his address. Observation of conditions throughout the world has convinced Mr. McGraw that nationalized electric service is inferior to the free enterprise electric system of the U. S., yet he continues to find a strong drive for nationalization in this



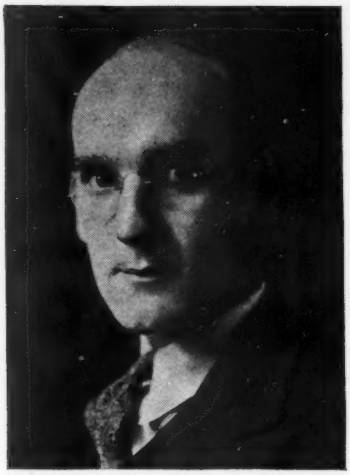
HAROLD H. YOUNG
Partner, Eastman, Dillon & Co.

WALKER L. CISLER
Executive Vice President, The Detroit Edison Co.

A. C. MONTEITH
Vice President, Westinghouse Electric Corp.



C. W. E. CLARKE
Vice President, United Engineers and Constructors, Inc.



T. J. BROSNAN
Distribution Engineer, Buffalo Niagara Electric Corp.

S. W. ANDREWS
Chairman, EEI Rate Research Committee

country. Why this is true and what can be done about it will be the subject of his talk.

The final address of the first session will be given by James H. Jewell, Manager of Apparatus Sales, Westinghouse Electric Corporation. "We must sell to live," Mr. Jewell will point out in his discussion of the surplus manufacturing capacity and generating capacity beginning to become evident and the measures which must be taken to support the expanded plant.

Second General Session

Leading off in the second general session, at 10 a. m., Wednesday morning, will be Philip Sporn, President of American Gas & Electric Service Corporation. Mr. Sporn's speech is entitled "Controlling Costs: The Power Industry's Achievement and Opportunity" and in it he will emphasize the importance of controlling costs in producing the industry's unique rate history. He will also stress management's major concern with ways of increasing economy and efficiency, as practically all elements of costs remain at record high levels.

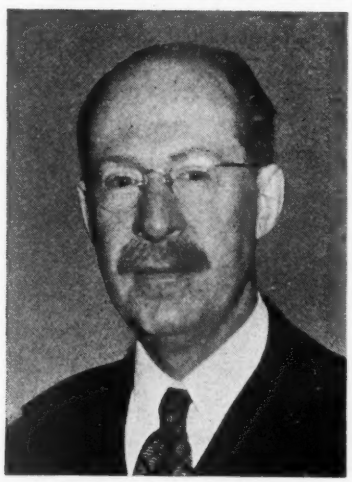
Charles E. Wilson, President of the General Electric Company, will discuss "minding our business" and, commenting on the government's special attention to the affairs of large industries, will remark on the electric industry's role as a veteran performer under government scrutiny.

An address by Harold H. Young, Partner in Eastman, Dillon and Company, will complete the second session. Entitling his address "Outlook for Utility Financing," Mr. Young will offer a solution to the continuing problem of financing the electric industry's construction program, and will review the market for different types of securities as well as suggesting ways to make financing as easy as possible.

Parallel Session—Engineering

On Wednesday afternoon, two ses-

L. R. LEFFERSON
Manager, Rate Department, Ebasco Services Inc.



PAUL W. McQUILLEN
Partner, Sullivan & Cromwell

H. M. SAWYER
Chairman, EEI Prize Awards Committee

TOM P. WALKER
Vice President, Irving Trust Co.

MORRIS SAYRE
Chairman of the Board, National Association of Manufacturers

KINSEY M. ROBINSON
President, The Washington Water Power Co.

sions will get under way simultaneously in the Haddon Hall Hotel at 2:30 p.m., one on engineering, the other on rates. To begin the engineering session, Walker Cisler, Vice President of The Detroit Edison Company, will speak on "Wartime and Postwar Achievements of the Electric Utility Industry," giving attention to the industry's contributions to the national economy and a rising standard of living, as well as to the nation's defense.

Viewing standardization as an investment, A. C. Monteith, Vice President of Westinghouse Electric Corporation, will speak on standards which, to be effective, must be taken seriously as basic electrical formulae. Mr. Monteith will probe the question of whether we are getting everything out of this activity and if it is not time to take a more positive stand.

Thermal prime movers will be discussed by C. W. E. Clarke, Vice President and consulting engineer of United Engineers and Constructors, Inc. In surveying past developments and future expectations, Mr. Clarke will point out that the phenomenal advance in the prime mover field is the principal factor making possible the intensive development of the electric industry over the last forty years.

T. J. Brosnan, Distribution Engineer of Buffalo Niagara Electric Corporation and Chairman of the EEI Transmission and Distribution Committee will deliver the final address of this session. In dealing with "Economic Distribution for Tomorrow's Loads," Mr. Brosnan will recommend that distribution system design be given the same care as that of generating plants with respect to economy, dependability and appearance.

Parallel Session—Rates

The session on rates will begin on Wednesday afternoon at 2:30 p. m., in the Haddon Hall Hotel, being held at

HAROLD H. SCAFF
Vice President, Ebasco Services Inc.

WILLIAM W. BODINE
Financial Vice President, The Penn Mutual Life Insurance Co.

GEORGE B. ROBERTS
Vice President, National City Bank of New York

EDWIN VENNARD
Vice President, Middle West Service Co.

D. C. McKEE
President and General Manager, Empire District Electric Co.

MERRILL E. SKINNER
Vice President, Union Electric Co. of Missouri

the same time as the engineering session. First speaker to address the rate meeting will be S. W. Andrews, Rate Engineer of American Gas and Electric Service Corporation, who will discuss rate trends since the war and some of the rate problems still facing us.

L. R. Lefferson, Manager of the Rate Department of Ebasco Services Inc., will then talk on residential rates for tomorrow's loads. He will inquire into the problem of gaining adequate earnings from residential rates to compensate for the larger capital investment needed to serve growing residential and farm demands.

Calling his address "The Lawyer's New Tasks in Rate Proceedings," Paul W. McQuillen, Partner in Sullivan and Cromwell, will wind up the session with a view of legal problems flowing from shrunken dollars, swollen costs, and the race to be ahead of customer demands; together with a discussion of choice of procedures to help in their solution.

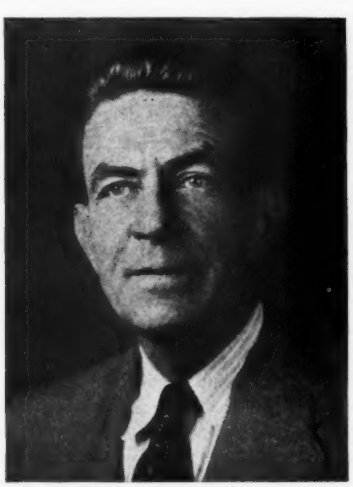
Third General Session

On Thursday morning, in the Atlantic City Convention Hall, the third general session will begin at 10 a. m. with a report of the Prize Awards Committee by Chairman H. M. Sawyer, Vice President of American Gas and Electric Service Corporation. Following the prize presentations, Tom P. Walker, Vice President of the Irving Trust Company, will discuss the methods of building relations with investors through financial agencies, pointing out that active and intelligent cultivation of financial agencies, which serve the investor, pays off handsomely in smooth and economical financing.

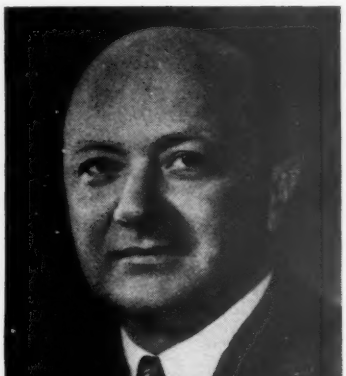
Morris Sayre, President of Corn Products Refining Company and Chairman of the Board of the National Association of Manufacturers, will deal

A. G. MITCHELL
Chairman, EEI Accounting Division Executive Committee

HARRY RESTOFSKI
Chairman, EEI Commercial Division General Committee



E. W. DILLARD
Chairman, EEI Engineering Division General Committee



C. E. KOHLHEPP
Member, Program Committee

W. C. BECKJORD
Chairman, Program Committee

McGREGOR SMITH
Member, Program Committee

with public relations and our fifth freedom—that freedom of enterprise upon which all the freedoms enjoyed by Americans are based.

Completing the session, Kinsey M. Robinson, President of The Washington Water Power Company, will speak on practical phases of employee morale, and the importance of utilizing employee effort to preserve private enterprise in the electric industry. In particular, Mr. Robinson will describe his own company's experience in gaining employee support in a public relations program and the high level of employee morale that resulted.

Parallel Session—Accounting

The final two sessions of the Convention will be parallel meetings on financing and accounting questions, and commercial activities. Both meetings will be held on Thursday afternoon at 2:30 p. m. in the Haddon Hall Hotel.

As the first speaker on the accounting agenda, Harold H. Scaff, Vice President of Ebasco Services Inc., and Chairman of the EEI Committee on Financing Utility Capital Requirements, will discuss the problems involved in getting the equity money required to help finance the largest expansion program in the industry's history, and will outline the work that should be done.

"Long Term Lease Financing and Its Applicability to Public Utility Companies," will be the subject of a talk by William W. Bodine, Financial Vice President of The Penn Mutual Life Insurance Company, and former president of The United Gas Improvement Company. Mr. Bodine will review the construction or sale and lease-back form of property financing, a relatively new and simple plan which has been used to quite a considerable extent by industrial organizations during recent years.

In a last minute addition to the roster of speakers before the Accounting session, C. Emory Glander, Tax Commissioner of Ohio and President of the National Association of Tax Administrators, has been secured to speak on the necessity for more protection of the taxpayer, urging improved budget and accounting procedures for government units, intergovernment cooperation, simplified tax structures, uniformity in tax administration and a hearkening to the voices of the taxpayers as well as the tax spenders.

Climaxing the session will be an address by George B. Roberts, Vice President of the National City Bank of New York, in which he will examine trends in today's economic and socio-economic picture for clues to future business conditions, their effect on industry in general and on regulated utilities in particular. Mr. Roberts will discuss such specific elements as the tax trend, income distribution, government social policies, population trend, and labor organization.

B. L. ENGLAND
President, Atlantic City Electric Co.

Parallel Session—Commercial

The counterpart to the accounting session will be the parallel session on commercial activities, beginning at 2:30 p. m. on Thursday afternoon, in the Haddon Hall Hotel.

"We Must Sell Aggressively Today," will be the first speech of the session, in which Edwin Vennard, Vice President of Middle West Service Company, will study the industry's past record of capacity and load, and the need for sales effort in a market where there is more competition for more limited consumer dollars. Projections into 1952 will be made of capacity and load, and gross and net revenue.

"What Are We Selling For?" is the challenging title of an address by B. C. McKee, President and General Manager of The Empire District Electric Company. We should sell to maintain and improve our economic position, Mr. McKee will point out, but are we placing proper emphasis on our larger responsibility of assuring that our service contributes to the welfare of the people we serve?

(*Continued on page* 127)

CONDENSED PROGRAM OF THE 17TH ANNUAL EEI CONVENTION

Atlantic City, N. J., May 31–June 2, 1949

Tuesday, May 31—2:30 PM

1ST GENERAL SESSION

"The President's Address"
ERNEST R. ACKER, President,
Edison Electric Institute

"Section 11 and a Strong Utility Industry"
Hon. EDMOND M. HANRAHAN, Chairman,
Securities & Exchange Commission, Washington, D. C.

"You Can Lose Only Once"
JAMES H. McGRAW, JR., President,
McGraw-Hill Publishing Company, New York, N. Y.

"We Must Sell to Live"
JAMES H. JEWELL, Manager of Apparatus Sales,
Westinghouse Electric Corp., Pittsburgh, Pa.

Wednesday, June 1—10:00 AM

2ND GENERAL SESSION

"Controlling Costs: The Power Industry's Achievement and Opportunity"
PHILIP SPORN, President,
American Gas & Electric Service Corp., N. Y., N. Y.

"Minding Our Business"
CHARLES E. WILSON, President,
General Electric Company, New York, N. Y.

"Outlook for Utility Financing"
HAROLD H. YOUNG, Partner,
Eastman, Dillon & Company, New York, N. Y.

Wednesday, June 1—2:30 PM

PARALLEL SESSION—ENGINEERING

E. W. DILLARD, *Chairman,* Engineering Division General Committee, EEI, *Presiding*

"Wartime and Postwar Achievements of the Electric Utility Industry"
WALKER CISLER, Executive Vice President,
The Detroit Edison Company, Detroit, Mich.

"Standardization—An Investment"
A. C. MONTEITH, Vice President,
Westinghouse Electric Corp., Pittsburgh, Pa.

"The Present and Future of Thermal Prime Movers"
C. W. E. CLARKE, Vice President and Consulting Engineer, United Engineers and Constructors, Inc., Philadelphia, Pa.

"Economic Distribution for Tomorrow's Loads"
T. J. BROSNAN, Distribution Engineer
Buffalo Niagara Electric Corp., Buffalo, N. Y.

Wednesday, June 1—2:30 PM

PARALLEL SESSION—RATES

S. W. ANDREWS, *Chairman,* Rate Research Committee, EEI, *Presiding*

"Rate Trends and Problems"
S. W. ANDREWS
American Gas & Electric Service Corp., N. Y., N. Y.

"Residential Rates for Tomorrow's Loads"
L. R. LEFFERSON, Manager, Rate Department,
Ebasco Services Inc., New York, N. Y.

"The Lawyer's New Tasks In Rate Proceedings"
PAUL W. McQUILLEN, Partner,
Sullivan and Cromwell, New York, N. Y.

Thursday, June 2—10:00 AM

3RD GENERAL SESSION

Prize Awards Announcements
H. M. SAWYER, Chairman,
Prize Awards Committee

"Building Relations With Investors Through Financial Agencies"
TOM P. WALKER, Vice President,
Irving Trust Company, New York, N. Y.

"Public Relations and Our Fifth Freedom"
MORRIS SAYRE, President,
Corn Products Refining Company, and Chairman of the Board, N.A.M., New York, N. Y.

"Practical Phases of Employee Morale"
KINSEY M. ROBINSON, President,
The Washington Water Power Co., Spokane, Wash.

Thursday, June 2—2:30 PM

PARALLEL SESSION—ACCOUNTING

A. G. MITCHELL, *Chairman,* Accounting Division Executive Committee, EEI, *Presiding*

"The Industry's Part in the Financing Program"
HAROLD H. SCAFF, Vice President,
Ebasco Services Inc., New York, N. Y.

"Long Term Lease Financing and Its Applicability to Public Utility Companies"
WILLIAM W. BODINE, Financial Vice President,
Penn Mutual Life Insurance Co., Philadelphia, Pa.

"Protecting the Taxpayer"
C. EMORY GLANDER, Tax Commissioner of Ohio
President, National Association of Tax Administrators

"Economic Trends and Their Possible Effects on the Future"
GEORGE B. ROBERTS, Vice President,
National City Bank of New York, New York, N. Y.

Thursday, June 2—2:30 PM

PARALLEL SESSION—COMMERCIAL

HARRY RESTOFSKI, *Chairman,* Commercial Division General Committee, EEI, *Presiding*

"We Must Sell Aggressively Today"
EDWIN VENNARD, Vice President,
Middle West Service Company, Chicago, Ill.

"What Are We Selling For?"
D. C. McKEE, President and General Manager,
Empire District Electric Company, Joplin, Mo.

"The Sale We Must Not Lose"
MERRILL E. SKINNER, Vice President,
Union Electric Company of Missouri, St. Louis, Mo.

New Kitchen Film—*"The Constant Bride"*

George A. Hughes and Laura McCall Home Service Awards Presented at Sales Conference

H. C. RICE (right), Manager of Domestic Sales, Southern California Edison Co., accepts the George A. Hughes Award, Class I, for promotion of all-electric kitchens during 1948, from Len Truesdell (left), Vice President, Hotpoint, Inc.

R. H. ASHWORTH (right), Vice President, Utah Power & Light Company, accepts the first prize in Class II of the George A. Hughes Awards for his company's promotion of domestic electric ranges during 1948, from Mr. Truesdell (left).

FRED A. COMPTON (right), General Sales Manager, The Detroit Edison Company, accepts the first prize in the George A. Hughes Awards, Class III, for his company's promotion of electric water heaters during 1948, from Mr. Truesdell (left).

H. R. JONES (right), Commercial Sales Manager, West Penn Power Company, accepts the first prize in the George A. Hughes Awards, Class IV, for commercial electric cooking during 1948, from Mr. Truesdell (left).

MRS. LUCILE RAMIREZ (right), Home Service Director, Washington Water Power Company, accepts the Division A, Laura McCall Home Service Award for her company, presented by A. P. MacNamee of *McCall's Magazine.*

MISS MARGARET SCHNEIDER (right), Home Service Director, Wheeling Electric Company, Wheeling, W. Va., accepts her company's prize for Division B of the McCall Awards, presented by Mr. MacNamee (left).

MISS ELIZABETH PARKER (right), Home Service Director, Georgia Power Company, receives her prize for Division C of the McCall Awards, presented by Mr. MacNamee (left).

MRS. KATHRYN SPENCER (right), Home Service Advisor, Indianapolis Power & Light Company, accepts her prize in Division C of the McCall Awards, presented by Mr. MacNamee (left).

O. R. Doerr, Vice President, Pacific Gas & Electric Company, accepted the McCall Award, Division C, for MISS MARGUERITE FENNER, Home Service Director of the same company, presented by Mr. MacNamee (right).

Sales Conference Speakers Urge More Aggressive Selling

Capacity Audience Attends Fifteenth Annual EEI Sales Conference

SELLING is again moving to the front in successful utility operation and will, in the years ahead, be an increasingly important factor in controlling the economics of our business . . . You can take just pride in the fact that you have maintained effective sales organizations against great odds, and are now prepared to meet the immediate problems created by the overnight shift to buyer's market . . . These words of Ernest R. Acker, President of the Edison Electric Institute, to the electric company sales and advertising managers attending the 15th Annual EEI Sales Conference, form a fitting theme for the meeting.

Sales Back Expansion Program

Throughout the four-day conference, speakers emphasized the large amounts of additional revenue necessary to support the industry's capital structure after completion of its expansion program, the importance of selling selectively and profitably, those services which contribute most to net income, and the need for the industry to resume aggressive sales activities to meet sharply increased competition.

Among the outstanding events of the Sales Conference, which was held at the Edgewater Beach Hotel, Chicago, April 4 to 7, were talks by Mr. Acker and J. B. Thomas, President of the Texas Electric Service Company; several presentations dealing with various phases of the Planned Lighting Program and EEI's new All-Electric Kitchen Program, and the announcement of the 1948 winners of the Thomas W. Martin, George A. Hughes and Laura McCall awards.

All-Day Home Service Session

Another feature of the meeting was the first all-day session on home service, which was held on Monday, April 4. With Miss Lucile Johnson, Chairman of the Home Service Committee presiding, the meeting stressed new demonstration techniques for home appliances, with representatives of manufacturers and electric companies presenting the latest ideas developed in this field, among other subjects.

A panel discussion on the "Role of Home Service in Promoting Electrical Living" was led by Miss Clara Zillessen, Philadelphia Electric Company. Norman H. Barnes, Potomac Electric Power Company; Ada Bessie Swann, "Woman's Home Companion"; E. W. Seese, Philadelphia Electric Company, and Loreen Jacobson, Wisconsin Power and Light Company took part in the discussion.

C. A. Collier, Vice President, Georgia Power Company, presented an informative talk on the topic "Measuring Home Service Results." Among the other speakers heard were Frances Armin, National Adequate Wiring Bureau; Adelaide Fellows, Philco Corporation; Myrtle Fahsbender, Westinghouse Electric Corporation, Julia Kiene, Westinghouse, and J. R. Poteat, General Electric Company.

Four Sectional Meetings on Tuesday, April 5

Four all-day meetings sponsored by the Commercial Sales, Farm, Industrial Power and Heating, and Residential sections of the EEI Commercial Division filled Tuesday, April 5.

The Commercial Sales Section, with Luther T. Cale, Chairman of the Commercial Cooking Committee, and George E. Korten, Chairman of the Street Lighting Coordination Committee, dividing the chairman's responsibilities, stressed lighting and commercial cooking in its session. Following opening remarks by

At the speaker's table in Chicago, before the 15th Annual EEI Sales Conference. Seated, left to right: Ernest R. Acker, EEI President; Harry Restofski, Chairman, Commercial Division General Committee, and J. B. Thomas, President, Texas Electric Service Company. Standing, left to right: H. M. Sawyer, Chairman, Prize Awards Committee; J. C. Cahill, Chairman, Farm Section; H. A. Stroud, Chairman, Residential Section; C. A. Stevens, Chairman, Commercial Sales Section; E. O. George, Chairman, Sales Personnel and Training Committee, and J. R. Hartman, Chairman, Industrial Power and Heating Section.

C. A. Stevens, Section Chairman, the work of the Market Development Committee was outlined by Sydney Alling, Committee Chairman and E. B. Haskell, Vice Chairman.

Frank L. Sacha of Hotpoint, Inc., and T. J. Scully, Griswold Manufacturing Company, were then heard in talks on commercial cooking equipment sales. Dan Clark, restaurateur of South Bend, Ind., concluded the morning session with a talk on his personal experiences with electric cooking equipment.

Planned Lighting was headlined during the afternoon session, with J. M. Stedman, Pennsylvania Power and Light Company, describing the successful "Planned Lighting Clinics" sponsored by his company to train contractors and others in planning modern lighting installations. A dramatic production by Paul Manchester and members of the Commercial Lighting Committee developed several new ideas for Planned Lighting promotion to stores.

Street Lighting Panel Discussion

A panel discussion on street lighting featured B. J. Jensen, Public Service Electric & Gas Company, as moderator. Participating were George E. Whitwell, Vice President, Philadelphia Electric Company; D. M. Baldwin, National Safety Council; Marye Dahnke, Kraft Foods Company; L. F. Heckmann, Union Metal Manufacturing Company; L. M. Johnson, Commissioner, Department of Streets and Electricity, Chicago, Ill., and C. E. Wagenman, Griswold-Eshleman Company.

Charles R. Cornic, Business Manager, Board of Education, Birmingham, Ala., concluded the meeting with a description of the extensive school re-lighting project which his city has launched.

The Farm Section meeting, presided over by J. C. Cahill, Section Chairman, first heard reports by its committee chairmen, Fred M. Shaw of the Agricultural Development Committee, and John L. Burgan, Farm Utilization Committee. Herman J. Gallagher, Consumers Power Company, reported on the section's 4-H and FFA activities, and R. T. Jones, Pennsylvania Power and Light Company, on electric water systems promotion. Dr. Harlan English, Chairman of the Committee on Rural Medical Service, Illinois State Medical Society, concluded the morning session with a talk on rural health and sanitation.

The Farm Section luncheon heard Dr. William I. Myers, Dean of Agriculture, Cornell University, in a discussion of prospects for the future in agriculture and farm electrification.

The afternoon meeting heard A. G. Brown, Deputy Commissioner, Agricultural Commission, American Bankers Association, discuss the role of the country bank in helping to improve agriculture; a presentation of vocational agriculture training by E. A. Hutchinson, vocational-agriculture teacher and Thomas Uithoven, a vo-ag student, and J. V. Baker, Sears, Roebuck & Company, who described his company's activities in appliance sales.

J. R. Hartman, Industrial Power and Heating Section Chairman, and Robert G. Ely, Vice Chairman, presided at the section meeting, which was opened by a report by Mr. Hartman on industrial sales activities. W. V. O'Brien, General Electric Company, then presented a forecast of basic economic trends, and was followed by F. Warren Brooks, The Cleveland Electric Illuminating Company, with a talk on "Selling Industrial Service at Higher Prices." John W. O'Nan, of the Pittsburgh Development Council, analyzed the effects of pricing system changes on plant locations.

Maxwell Cole, Philadelphia Electric Company, opened the afternoon session with a discussion of market analyses as an aid to sales management. "Present Customers — Our Future 'Bonanza'" was the topic of a talk by W. A. MacCalla, West Penn Power Company, and J. H. Coates, Ebasco Services Inc., discussed the need to reduce unit sales costs. Carl T. Bremicker, Vice President, Northern States Power Company, pointed out the vast future potential of industrial power sales.

New Load-Building Possibilities

The Residential Section, with H. A. Stroud, Section Chairman, presiding, heard an analysis of the load-building possibilities of the automatic electric laundry by E. O. George, The Detroit Edison Company; a discussion of the home freezer by F. F. Duggan, Chairman of the Farm and Home Freezer Section, NEMA; and a presentation of the appliance outlook by T. J. Newcomb, Westinghouse Electric Corporation.

"All Aboard," a skit presented by the EEI Electric Kitchen and Laundry Committee, closed the morning session. A dramatic portrayal of the new Electric Kitchen Program, the presentation pointed up the success that many companies have had with the varied promotional materials supplied in this program.

"The Green House," a film showing the 'Sunshine Home' and its possibilities in lighting sales, was presented by C. B. Hellmann, Chairman of the Residential Lighting Committee. H. H. Brenan, Pennsylvania Power and Light Company, then outlined his company's successful sales activities with Certified Lamps. The Better Light-Better Sight Bureau's sight-light teaching program for grade school classes was discussed by Robert I. Bull, The Ohio Power Company, and L. R. Cole, West Penn Power Company.

Home service then took the spotlight, with Miss Leonora O'Neal, Gulf States Utilities Company, describing "The New Look in Home Service," and Mrs. Mariquita Dygert, The Detroit Edison Company, discussing the problem of recruiting home service personnel.

The role of television as an advertising and public relations medium for the electric company was outlined by George W. Wallace, National Broadcasting Company, as the last event on the Residential Section program.

General Sessions, April 6

Harry Restofski, Chairman of the EEI Commercial Division General Committee, opened the General Sessions on the morning of Wednesday, April 6. Stressig the need for aggressive sales activities, Mr. Restofski said that potential markets open to the industry "are so big as to dwarf those we have already sold, and challenge our best sales efforts."

The residential electric kitchen market alone offers a potential market in retail sales of electric appliances of over $35 billion, with an annual use of 165 billion kwhr per year and electric service revenues of $2 1/3 billion, a figure greater than the industry's total revenues in any single year prior to World War II, Mr. Restofski pointed out. But, "while potential markets are gigantic, they will not drop into our baskets like ripe plums," he warned, emphasizing that the industry needs "rapid strengthening of sales planning and sales organizations for more aggressive selling. We must sell selectively and effectively in those markets that are most promising."

"We are exploring for a price level, on which business men, investors and others can face the future with some confidence. Through this boom and period of illusory large earnings, we have sensed its temporary, ephemeral nature. Now it is fashionable to get prices down, and the smart ones are getting down rapidly," Merryle Stanley Rukeyser, noted newspaper columnist and lecturer, declared.

"The American system is dynamic, subject to continual changes," he emphasized. "If these changes are creatively implemented by salesmanship, science and invention, our experience has been that these changes are beneficial and progressive."

"Farming is the biggest privately owned business in the United States, with 100 billion dollars invested in agricultural plant. It is made up of 6 million competitive units, small businesses. The farmer is the very essence of the competitive, free-enterprise system of business as we know it in this country," the conference audience was told by Dr. Paul D. Sanders, editor of the *Southern Planter,* Richmond, Va.

"A prosperous agriculture is the key to sustained prosperity in this country," he continued. "When farmers have money, small-town business is good and our cities become prosperous. But, empty pocketbooks on the farm do not turn the wheels of industry in cities . . . In the farms and small towns we have the new frontier for business, the comparatively undeveloped segment of the American economy."

The last event of the initial general session was a showing of "The Constant Bride," the full color motion picture prepared for the EEI All-Electric Kitchen Program, which tells a human-interest story of the electric kitchen and its advantages for the housewife.

The Public Utilities Advertising Association luncheon on Wednesday heard Dale Cox, Director of Public Relations, International Harvester Corporation, discuss the topic, "Customer Relations in the Electric Utility Industry, as Viewed by an Outsider."

Lighting Load

"The Lighting Load Is the Mother Lode," a dramatic presentation of the Lamp Department, General Electric Company, opened the Wednesday afternoon session. Starring Harold Green and E. C. Commery, the skit was intended to show that for the average electric company, the 'Mother Lode'—the area in which gold is concentrated and returns are the richest—lies in promotion of lighting. Home lighting, in particular, which now contributes an estimated 16 per cent of total revenues and 40 per cent of residential revenue, "can and should be doubled," it was said. Urging the audience to prepare for more active home lighting promotion, the skit pointed out that although "the potential home lighting opportunity is today at least twice as great as in 1940, electric companies have less than one-fourth as many home lighting advisors as they had before the war."

L. L. KOONTZ (right), Appalachian Electric Power Co., accepts the Thomas W. Martin Rural Electrification Award for his company at the Sales Conference from E. C. Easter (center), Alabama Power Co., and H. M. Sawyer, Chairman, Prize Awards Committee.

Detroit Television Study

Fred A. Compton, General Sales Manager, The Detroit Edison Company, then described his company's experience with television. Field studies, he said, have revealed that the average television receiver is in use about 22 per cent of a 24-hour day, with the greatest use—91 per cent of sets in use simultaneously—occurring at 9 p.m. "Last year our TV customers' electric bills increased by 18.3 per cent, of which 11.2 per cent was attributable to television and the rest to lighting and other appliances," Mr. Compton declared.

A shortage of trained service personnel exists, he continued, adding that "our experience indicates that one service man is needed for each 200 sets. This is expected to improve, with continued improvement in the quality of sets."

The number of TV sets in the U. S. increased by 460 per cent in 1948, to a total of 868,200, and is expected to reach 3 million this year, Mr. Compton said. Some 50,000 sets have been installed in areas where transmitters are only in the construction stage, in anticipation of the completion of construction. It is estimated that there will be 18 million sets in use by 1953.

Using "E-Day Minus 55" as his theme, Ted Malone, radio commentator, described the importance of the electrical industry's "E-Day," which will be on June 1. On this day, he said, electric utilities, manufacturers, retailers and other elements of the industry will join in a nation-wide promotion of the industry's new slogan, "Of Course—It's Electric," which was developed as part of the EEI All-Electric Kitchen Program.

"It is a tremendous undertaking to try to sell America on any one phrase—it is a tremendous undertaking to try to get an industry unified on any one phrase. . . . But, if we can put over this idea, 'Of Course—It's Electric,' we will make Americans conscious of all the things that make lives better, richer and finer when they buy electrical appliances. On E-Day, if all of us get together and launch this drive, the battle will have only begun, but we will be rallying around a very simple, very important phrase!" Mr. Malone declared.

Better understanding of the other fellow, and of the other nation, can be the key to the world's problem, the meeting was told by Nathaniel Leverone, Chairman of the Board of the Automatic Canteen Company of America. "Human beings create problems. You can study a problem forever, but you'll never solve it if you don't understand the type of man who created it," Mr. Leverone said.

Prize Award Winners

H. M. Sawyer, Chairman of the Institute's Prize Awards Committee, opened the Thursday morning session

with the presentation of three of the industry's prize awards.

The Thomas W. Martin Rural Electrification Award, for the electric company making the greatest contribution to the progress of farm electrification in its area during 1948, was awarded to the Appalachian Electric Power Company, of Roanoke, Va. This award is offered by Thomas W. Martin, President, Alabama Power Company.

Hughes Awards Presented

The George A. Hughes Awards, offered by Hotpoint, Inc., were presented in four classes. The first prize in Class I, for promotion of all-electric kitchens during 1948, went to the Southern California Edison Company which received a trophy and cash prize of $500. Second prize, a plaque and $300, was received by the Union Electric Company of Missouri.

The Utah Power & Light Company took first prize in Class II, for its promotion of residential electric ranges. The prize was a trophy, with $250 for the individuals responsible. Pennsylvania Power and Light Company received the second award, a plaque and $150.

The Detroit Edison Company was the winner in Class III of the Hughes Awards, for the best promotion of electric water heaters, and received a trophy and $250. Pennsylvania Power and Light Company took the second prize, a plaque and $150.

The West Penn Power Company received first prize in Class IV, a trophy and $250, for its promotion of commercial electric cooking. The Ohio Power Company was awarded the second prize, a plaque and $150.

The Laura McCall Awards, offered by *McCall's Magazine*, were presented in three divisions. Mrs. Lucile Ramirez, Home Service Director, Washington Water Power Company, received the award in Division A for her company's achievements in home service operation during 1948. Miss Margaret Schneider, Home Service Director, Wheeling Electric Company, took the first prize in Division B, for her company's 1948 home service record.

Three awards in Division C, for outstanding home service ideas, went to Miss Marguerite Fenner, Home Service Director, Pacific Gas & Electric Company; Miss Elizabeth Parker, Home Service Director, Georgia Power Company and Mrs. Kathryn Spencer, Home Service Advisor, Indianapolis Power & Light Company.

Each of the five McCall Awards winners received a plaque, with $200 in cash.

The remainder of the morning session was filled by the "Productive Power Show," sponsored by the Westinghouse Electric Corporation. Developed to show American industry some of electricity's uses as a productive tool, the presentation featured demonstrations of wiring, resistance welding, radio frequency heating, lighting, air cleaning, infrared drying and other applications, and dramatized the bright future of industrial power sales.

Luncheon Session

Ernest R. Acker, EEI President, and President of the Central Hudson Gas & Electric Corporation, was the first speaker at the closing luncheon session. "Maintenance and improvement of load factor," Mr. Acker declared, forms "an important element in offsetting increasing investment costs. This is the particular province of our sales organizatios, and to the extent that it can be controlled, represents our biggest opportunity for the future. There is no new principle involved—it is merely a recognition of the fact that selective selling is more important to the industry than ever before and that you, as sales executives, have a great responsibility for the control of our future economics.

"I know that this group has already given serious consideration to the large amounts of additional revenue necessary to carry the capital structure of the industry on completion of its $9 billion expansion program. It is obvious that the industry must sell in larger volume than in any previous period, but more important still, must sell profitably. . . . It will be increasingly important that the new business which comes as a result of our own promotional efforts be judged by the contribution which it makes to net income," Mr. Acker declared.

Following Mr. Acker, J. B. Thomas, President of the Texas Electric Service Company, discussed the status of government power projects and the need for better public understanding of the industry. Illustrating the growth of federally financed electric power systems with a series of slides, Mr. Thomas said that "governmental agencies and bureaus are spending millions of dollars a year, most of it taxpayers money, to propagandize the country and the particular areas in which they may be interested for government ownership, for the extension of governmentally financed, tax-free undertakings."

Urging his audience to "take every reasonable method and opportunity to see that the general public is informed as to the facts about governmental ownership," Mr. Thomas said that "this group alone, well-informed and militant, could of itself do much to stop the tide of socialization of our business, and the consequent socialization of the entire business of the nation."

F. E. Kruesi

FRANK E. KRUESI, President of Central & South West Utilities Co. and former president of the Wisconsin Power & Light Co., Northwestern Public Service Co., the Middle West Service Co. and other electric utility companies in the midwest, died in New York on April 8, 1949. At the time of his death, he was 63 years old, and was serving on the board of directors of the Edison Electric Institute.

Mr. Kruesi was born in Brooklyn, N. Y., educated at Union College, Schenectady, N. Y., and received a B. S. degree at the University of Wisconsin in 1908. While attending college he worked during the summer months in the research laboratories of the General Electric Company in Schenectady.

From 1908 to 1915, Mr. Kruesi was with the Commonwealth Edison Company. In 1916, he moved to Canada where he remained as manager of the Great Lakes Power Co., Ltd., of Sault Sainte Marie, Ontario, until 1917. In 1919, he accepted the managership of Frazar & Co., an importing firm in Seattle, Wash., where he served until 1926.

The Middle West Utilities Co. in Chicago, Ill., called him back into the electric utility field, and he served with that company until 1933. In the years between 1933 and 1945, Mr. Kruesi headed, successively, the Wisconsin Power & Light Co., the Northwestern Public Service Co., North Dakota Power & Light Co., Central Power Co., The Middle West Service Co., and the Central and South West Utilities Co.

From 1946 until his death, Mr. Kruesi served on the board of directors of the EEI. Since 1946 he had also been a director of the Winnipeg Electric Company, Ltd., and of the American Lava Corporation.

"Selling Returns to the Front"

By Ernest R. Acker
President of the Edison Electric Institute

An address before the Fifteenth Annual EEI Sales Conference, Chicago, Ill., April 7, 1949

IT MUST be apparent to all that selling is again moving to the front in successful utility operation and will in the years ahead be an increasingly important factor in controlling the economics of our business.

This development comes after a number of years of frustrated selling during which our sales organizations showed remarkable ingenuity in meeting the wartime problems of curtailment and restriction and, during the postwar period, the difficult conditions of a seller's market.

Long Range Sales Programs

The demoralizing effect of these abnormal experiences is well known to all of you. I feel that you can take just pride in the fact that you have during this period maintained effective sales organizations against great odds and are now prepared to meet the immediate problems created by the overnight shift to a buyer's market. In addition, I am confident that you are in a position to develop the long-range requirements of the industry for sound sales programs related to its changing capital structure.

This conference reflects your acceptance of that responsibility and indicates a unity of purpose which I am encouraged to find throughout the EEI committee structure. I am convinced that a strong united front is essential in our current fight for survival and shall continue to work for its achievement in all Institute activities.

I am particularly pleased to see this conference in action because it provides one of the best demonstrations I have seen of the importance and effectiveness of the Institute's services to the industry. During my term of office I have been amazed on numerous occasions to hear the Institute referred to as primarily "a statistical and fact-finding organization." Such references have usually developed in discussions of the Institute's functions, or proposals to broaden its activities, and reflect, in my opinion, a lack of understanding by some executives of the extent and importance of our committee structure.

Far from being merely a statistical and fact-finding body, the Institute has a wide scope of engineering, sales, accounting and other activities which are demanded and supported by the industry and which represent the kind of cooperative effort that has kept the industry strong and vital throughout the entire period of its development. Aside from these activities the Institute does do a remarkable job of producing statistical and factual information for the use of its member companies and has, in this work, achieved a reputation for accuracy and reliability second to none. The research work involved in this activity is of tremendous importance to the industry at this particular time and I am happy to say that the recent increase in dues to provide chiefly for the expansion of this work has received the wholehearted support of our membership.

EEI Committee Work Essential

I want to emphasize again, however, that the committee work of the Institute is an essential factor in the continued progress of the industry, and I am particularly pleased that this sales executive group now has before it greater opportunity than ever before to render important service to the industry.

This opportunity is brought about by the great economic changes which we have witnessed in recent years and which have intensified many of the problems of utility management. Since the outbreak of World War II, our principal problems have been those of manpower, procurement of materials and supplies, provision for new capacity to keep ahead of demand and financing record construction expenditures. Fortunately, the problems of manpower and of materials and supplies have dropped into the background while the problems of capacity and financing have eased materially in recent months.

The capacity situation, while still of major importance, has been tackled so vigorously by the industry that its solution in most sections of the country is already in sight. Aside from this, the reserve situation for the immediate future has been eased by the leveling off of load increases in many areas.

The addition of new generating capacity has now reached top speed: 6,800,000 kilowatts will be added this year representing an increase of 12 per cent, and correspondingly large amounts will be added in 1950 and 1951. The installed capacity of the private utilities alone will increase from 40,000,000 kw at the end of the war to 61,000,000 kw at the end of 1951, or 52½ per cent. For the electric industry as a whole the 6-year increase will be from 50,000,000 to 75,000,000 kw, or 50 per cent.

New Capacity Growth Rate

If, as some forecasters believe, we can expect an average growth of 5 per cent annually over the succeeding ten years, the private companies will be adding capacity at the rate of 3,000,000 kw per year at the beginning of the period and 5,000,000 kw per year at the end of the period.

These unprecedented additions are reflected, of course, in the magnitude of the industry's financing problem. We are now about halfway through a $9-billion construction program, the financing of which raised grave doubts initially in the minds of many people. The record to date, however, has been most gratifying and the favorable market reaction to recent utility common stock offerings is particularly encouraging. The more difficult half of the job remains to be done in that it involves a higher proportion of common stock financing than has been accomplished to date. Under the circumstances, the net income showing and dividend record of the utilities will play an increasingly important part in their future financing problems.

In this connection it is encouraging to note that regulatory commissions are giving greater recognition to the fact that adequate earnings are essential to the attraction of new capital and are in many instances granting rate increases based on the additional earnings necessary to cover the capital requirements

of the business rather than on a theoretical return on a hypothetical rate base. A brief up-to-the-minute resumé of the rate-increase picture shows that 128 rate increases have been requested by 106 companies since January 1, 1947. Of these requests 100 have been granted to date, 27 are still pending, and one has been denied. Of the 27 cases still pending, one was started in September, 1948, 14 during the last quarter of 1948 and 12 during the first quarter of 1949. In general commissions have been quick to recognize the need and have acted promptly.

The one application which was denied was a request to insert a fuel clause in rates for Residential and Commercial service which would have added revenues of $42,000. Even in this case the utility was told it could submit evidence of the need for increasing its rates generally as against the original request for a fuel adjustment charge.

Fuel Adjustment Clauses

The full impact of these increases was not evident in the 1948 earnings figures of the industry, as the majority of the increases became effective after the middle of the year. Since that time, however, the earnings position of the industry has improved materially.

Many of the earlier rate applications provided for the addition or extension of fuel clauses, but the majority of applications since the middle of 1948 have been for increased rate charges about equally divided between Residential, Commercial and Industrial service. Fuel adjustment clauses, in fact, are losing some of their significance in view of somewhat lower coal prices and some improvement in quality. In addition, the improved efficiency of new generating stations installed since the war is having a substantial effect on over-all production costs.

The municipalities and other governmental agencies supplying electricity to the public have also felt the need for increased revenue. Over 200 increases were made effective in this field since 1947, even though many had increased rates during 1944 to 1946, the period of greatest rate reduction in the history of the private companies.

Two things stand out, I think, in our current experience with the rate problem —first, that the increases requested have been modest in amount although generally speaking constructive in form, and second, that we are now, and probably will continue for some time to be, out of step with the decline in the general price level. This implies that requests for rate increases should be filed promptly and pursued vigorously lest we "miss the market" and lose public understanding. In addition, every effort should be made to relate such increases to future capital requirements which in view of the heavy construction program of the next few years cannot help but weight our over-all costs with an increasing proportion of high investment costs.

All other things being equal and assuming that we have reached a relatively stable price level, our average unit investment cost must inevitably rise as our total investment becomes more and more saturated with high-cost plant. This, in my opinion, presents the great challenge of the day to the electric industry.

We know, of course, that "all other things being equal" is an unrealistic assumption as to this industry. We know that our engineers and research organizations will continue to improve equipment design and construction to produce lower unit costs of generating, transmission and distribution facilities and that new methods will continuously be developed, as they have been in the past to reduce operating costs in all departments of our business. This is our public duty and I feel strongly that every utility management, particularly at this time, should review its operations in detail and conduct a militant campaign to eliminate unnecessary activities, reduce operating costs and increase the productivity of its organization. I feel that the public should know that the industry is making a determined effort to limit rate increases to the amounts absolutely necessary for the maintenance of sound financial structures, after all other means to that end have been exhausted.

Selective Selling Important

This is not to say that proper expenditures for long-range activities of the industry should be foolishly eliminated and I refer particularly to the sales activities necessary for the future protection of our business. I am happy to say that this subject will be presented at our June Convention by an outstanding utility executive who will review what the industry has already accomplished and can accomplish in meeting this important issue.

The other important element in offsetting increasing investment costs is the maintenance and improvement of load factor. This is the particular province of our sales organizations and, to the extent that it can be controlled, represents our biggest opportunity for the future. There is no new principle involved—it is merely a recognition of the fact that selective selling is more important to the industry than ever before and that you, as sales executives, have a great responsibility for the control of our future economics. I know that this group has already given serious consideration to the large amounts of additional revenue necessary to carry the capital structure of the industry on completion of its $9 billion expansion program.

Volume Sales Called For

It is obvious that the industry must sell in larger volume than in any previous period but, more important still, must sell profitably. I realize that we cannot fully control the character of the new business which is attached to our lines, but I am equally sure that it will be increasingly important that the new business which comes as a result of our own promotional efforts be judged by the contribution which it makes to net income.

I would not attempt to tell this group *how* the selling job should be done, even if I were qualified to do so. Your past record is a clear indication of your competence in directing sales organizations and producing effective results. It has not been my purpose today to comment on selling techniques, but rather to stress the importance of sales philosophy as it is related to the over-all needs of the business. This involves, in my opinion, a closer coordination of rate making and selling than we have previously achieved in the industry. I recommend strongly that the Commercial Division General Committee and the Rate Research Committee of the Institute revive their joint discussions, initiated prior to the war, and organize for effective coordination of their respective efforts. I am sure that such coordination would be of mutual advantage to both groups and would point up the need for *joint* development of the economic studies required for the guidance of sales organizations in meeting their increased responsibility for profitable selling.

(*Continued on page* 128)

Television—A Load Builder

By F. A. Compton

General Sales Manager, The Detroit Edison Company

A paper presented before the Fifteenth Annual EEI Sales Conference, Chicago, Ill., April 6, 1949

SINCE 1945, and increasing with tremendous strides since that time, there has appeared upon the American market an electrical consuming device which has probably no precedent in its acceptance and growth. Television, whether we like it or not from an electric utility point of view, has certainly demonstrated that it is here to stay.

New Influences of Television

As members of the electrical industry, we have a very definite interest in this giant in swaddling clothes which, by the way, it is rapidly outgrowing. The influence of television upon the lives of our people cannot be underestimated. My purpose in speaking to you is to discuss with you television as a load builder and to point up some questions for your consideration to which we in the electrical field must find the answers. Some of these questions are those which have arisen in our minds as a result of a study we have undertaken in The Detroit Edison Company—others are presently in our thinking.

Therefore my subject falls into three parts:

1. Growth of television nationally.
2. Detroit Edison case load study.
3. Do we in the electric utilities have a responsibility to the television industry?

I would like briefly to show you the national scope of television and to talk with you about its effect on our industry.

First, then, how has television grown?

In 1945 there were approximately 10,000 television receivers. In 1946 there were 18,200. This figure spurted at the end of 1947 to 188,200, an increase of 1000 per cent. At the end of 1948 there were in service 868,200 receivers. This is a growth of 460 per cent or one television receiver for every 40 families in the United States.

One of the factors considered in estimating the sale of sets in 1949 is the manufacturers' ability to produce receivers. However, it is estimated that there will be in service by the end of 1949, 3,000,000 sets. Further, that by 1953, one of the large broadcasting systems estimates that there will be 18,000,000 sets in service. This is equivalent to one set to every two families in the United States. Then too, it is entirely possible that the ownership of receivers by 1953 can reach 24,000,000 sets as low-cost units come on the market and there is a backlog of used receivers available.

An interesting fact which further demonstrates the acceptance of television is that there are presently 50,000 sets installed in areas where transmitters are only in the construction stage and the sets have been purchased in anticipation of the completion of the construction.

Local transmitters which are not on a network have a potential audience of 14 per cent of the people in the United States. In 1948 there were in operation 51 stations in 31 cities. At the end of 1949 it is estimated that there will be 131 stations in 69 cities.

The present networks have a potential audience of 30.3 per cent of the people in the United States. In considering local transmitting stations and networks, there are now about 45 per cent of the American people who are located in areas served by television.

Characteristics of Growth

When television receiving first becomes available to a city, about 75 per cent of the sets in use are owned by commercial establishments and bars. However, shortly after the establishment of the transmitting station, there is a rapid change and about 93 per cent of the sets are in residences and only about 7 per cent in commercial establishments. This obviously means that any electric load that will accrue to utilities from television will be in residences.

National statistics show that the residence television receivers are owned in the following income levels: Upper income group, 11 to 12 per cent. Upper middle, middle, and lower middle income groups own 79 per cent of the sets and 10 per cent are owned by the lower income groups. In our own area in Detroit, we find an increasing number of television sets in the lower income groups. From these figures it is significant that 79 per cent of the present television owners are in the lower middle, middle, and upper middle income groups and, if our Detroit observations can apply nationally, we can look for a decided increase in the number of sets in the lower income groups as the original cost of the sets decreases.

Another significant factor in the growth of television is its ready acceptance by advertisers as an advertising medium. For example, in New York City in May of 1947 there were 50 advertisers. As of January, 1949, there are more than 1000 advertisers.

How Television Is Affecting Family Habits

It is important for us in the electric industry to be aware of how television is affecting family habits. Fig. 1 shows a chart which is reproduced from the Jan. 28 issue of *Tide Magazine*. It appeared in this magazine with a survey completed by the Duane-Jones Advertising Agency. Incidentally, the results of this study correlate very closely with the findings of our survey in Detroit. This chart shows the effect of television on radio listening, movie attendance, reading of books, magazines and newspapers, the increase in the number of children visiting homes and the number of adults visiting homes which have television.

Since it is apparent that television will make such gigantic strides in the next few years, let us consider its effect on the electric industry. First, let us examine its effect on the electrical appliance dealers. In Detroit we have been informed that television sales presently comprise from 30 per cent to as much as 50 per cent of the major appliance business. As a consequence, sales of other load-building appliances have rather sharply decreased since it is the tendency of people to purchase a medium for entertainment rather than a work-saving appliance.

Now I would like to discuss with you the experience which we, The Detroit Edison Company, have had with television and to tell you what we have done in an attempt to measure its effect on our revenue. You might consider

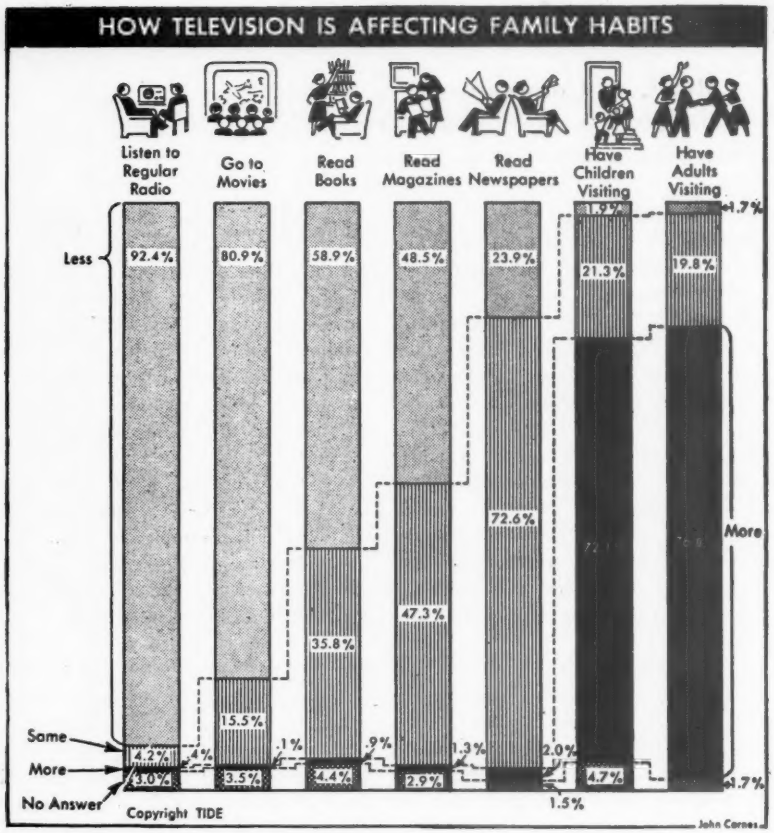


Fig. 1—Graph Showing "How Television is Affecting Family Habits," Reprinted With Permission From the January 28, 1949, Issue of Tide Magazine

this a case study with some rather interesting data which might apply in your own service areas.

Detroit Edison Television Study

Television was introduced to Detroit by WWJ-TV on June 3, 1947. It operated about 20 hours a week. It has grown to the point where now this station is in operation from a minimum of 45 hours to a maximum of 70 hours per week. WXYZ-TV went into operation on Oct. 9, 1948. It started with 19 hours a week of operation and presently is averaging from 30 to 35 hours. Station WJBK-TV went into operation on Oct. 24, 1948, and at first was in operation from 9 to 12 hours a week and is presently averaging from 21 to 24 hours per week.

The establishment of the midwestern network with five stations in September of 1948 stimulated the sales of television sets in the Detroit area. The hook-up of the eastern network on Jan. 11, 1949, with the midwestern network, serviced 33 stations in 16 cities. This has further accelerated the growth of sets locally. As of Feb. 1, 1949, there are 34,800 sets in our service area. Sales of sets have necessarily been limited to an area within a radius of about 50 miles of Detroit.

Recording Apparatus Used

In October, 1948, we undertook our first steps in studying television and its effect on our kilowatthour sales, its demand factor, load factor and kilowatthour use. We installed recording demand meters and kilowatthour meters in a selected sample of residences. After the recording demand indicators had given us a picture of the times of the day the television receivers were used (see Fig. 2), they were removed, but the kilowatthour meters will remain in these homes for a period of one year. Incidentally, one of the problems which we had with the installation of the demand meters was the amount of electrical apparatus necessary to be placed in the home. The total installation weighed 55 pounds and we did not wish to impose too greatly on the good graces of the housewife who had to conceal and move this equipment. The results of our study showed that:

1. *Average Wattage*—The average wattage per television set was 255 watts.
2. *Demand or Coincidence Factor*—(Based on 23 television sets over a seven-day period.) Maximum demand factor—0.911 or 91 per cent of the TV sets were in use simultaneously. This peak occurred at 9 p. m.
3. *Use of Receiver*—The average receiver is in use 22 per cent of a 24-hour day.
4. *Net Load Increase* — Assuming television customers would be using radios if their television sets were not in use, the increase in net load is the difference between television and radio wattages. This difference is approximately 150 watts per set.
5. *Sets in Use*—At the time we made our preliminary study, that is, Dec. 1, 1948, there were 25,660 sets in our area.
6. *Total Net Increase in Load on Company System*—With a net increase of 150 watts per set, the net increase in load was 3849 kw.
7. *Kilowatthour Use*—During the past year, television customers' bimonthly bills increased 18.3 per cent, of which 11.2 per cent is due to television and 7.1 per cent due to additional lighting and other appliance use. The average residence customer's bill increased 6.8 per cent during the same period, thus indicating a close correlation between the sample chosen for television metering and all residence customers.

We found that the average television set uses 0.944 kwhr per day. Deducting an equal number of hours' use of radio, the net is 0.611 kwhr per day as shown in Fig. 3.

Kilowatthour meters will be installed for an additional nine months, making available information regarding seasonal effect on kilowatthour use of television.

Electric Utilities Responsibility to Television

In discussing the electric utilities responsibility to television concerning the matter of promotion and sales, it would appear that we must consider:

1. Television as a revenue producer.
2. Television's effect on peak load.

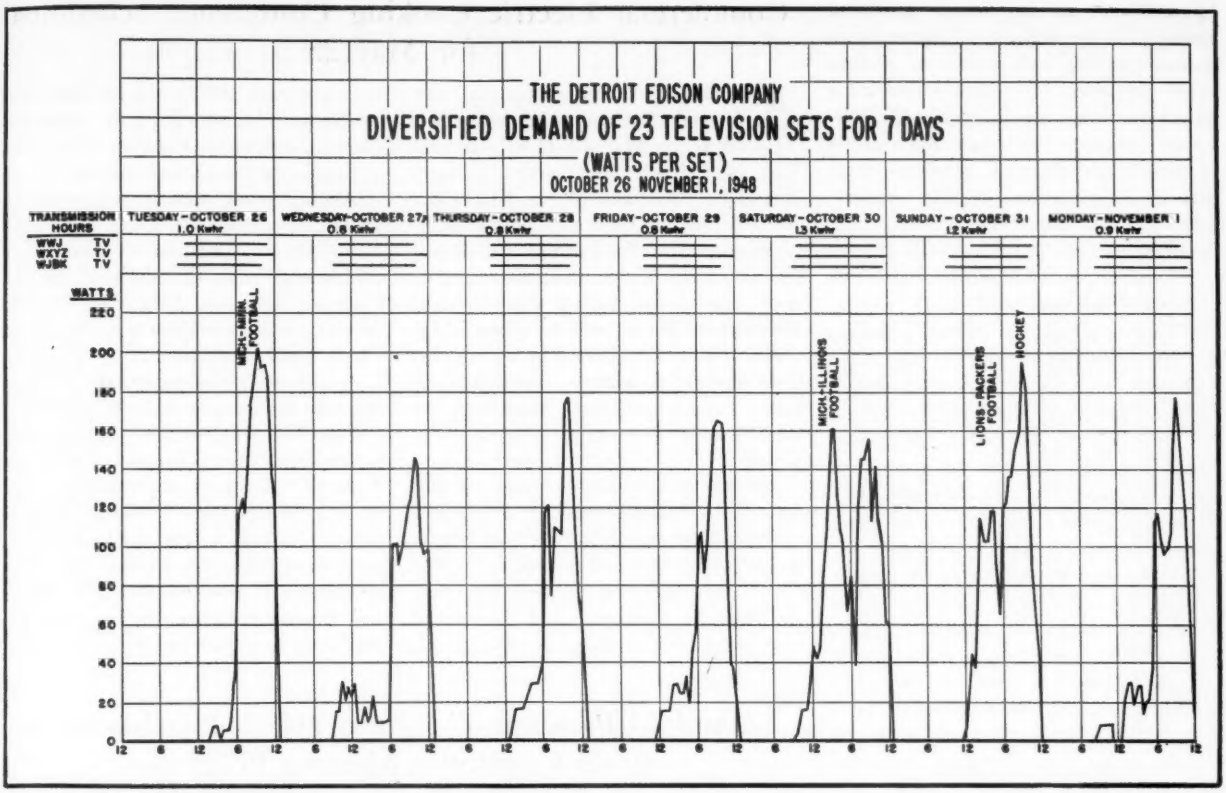


Fig. 2—Graph of the Daily Use of 23 Television Receivers for Seven Days in the Detroit Area. Prepared by the Detroit Edison Company

3. Television service problems.
4. Use of television by the utilities as a medium in our public and customer relation program.

On the basis of our study to date, and I would like to emphasize this study is not conclusive but rather indicates a trend, let us consider the data so far and apply it to our industry.

1. *What is the effect of TV going to be on the revenue of the electric utility company?*

Our study indicates that if we deduct an equivalent use of the radio from the amount of electricity used by television sets, our net increase per receiver will be about 18 kwhr per month. This, we think, will increase as additional hours of programming become available and the quality of transmitting and reception is improved.

2. *What is the effect of television on peak load of member companies?*

Our study indicates to date that it will have no appreciable effect on the peak loads, since the greatest use, or 91 per cent of the sets, comes in service at 9 p.m. as compared to 47 per cent of the sets in use at 5 p.m.

We are undoubtedly losing some lighting load as a result of television but we think that this is a matter of education on properly lighting the room for television. Considerable work, I believe, is being done on the phase of our own television program in educating the television user in the proper lighting of his room. This appears to be a natural method of presenting the story of proper lighting to the viewer, but since the available information is so limited, we have offered only the opinion that low levels of illumination should be used. *It seems to me that it is our responsibility as utilities to discover the answer to this problem without delay.*

It appears that television will be a good revenue producer if we get the proper answers on room lighting. Certain tangible factors such as the effect

TELEVISION KWHR USE

	KWHRS TELEVISION	KWHRS RADIO	NET KWHR
PER DAY	.944	.333	.611
PER MONTH	28.0	10.0	18.0
PER BILLING PERIOD	57.0	20.0	37.0
PER YEAR	340.0	120.0	220.0

Fig. 3—Table Comparing Kwhr Use of Television and Radio Receivers for the Day, Month, Billing Period and Year, Prepared by The Detroit Edison Company

of television on the living habits of families, while difficult to measure, indicates that we will benefit in revenue from television. For example, our study shows that the use of service by television customers has slowly but steadily increased and this has happened after giving consideration to the seasonal effects on the use of electricity.

3. *What is the electric utility's responsibility for providing service on television receivers?*

There is a lack of trained personnel to repair television sets. In our company, we have sold 1200 television sets to our employees, although we do not sell receivers to customers. We have found out that it takes an average of one serviceman for each 200 sets. Undoubtedly, some of these service problems will be overcome as new sets are developed and fewer repairman will be needed.

4. *What is the electric utility's responsibility to television in its public and customer relation program?*

We will all admit that radio is a very highly effective medium for reaching the people, but television reaches the ear and also the eye.

Sponsored Telecasts

In our company, we have sponsored until recently a newscast, and are presently considering a program directed at the youth. It will be aimed, from a customer relations standpoint, at the teen-age group who will be our future customers. We are also presently sponsoring a half-hour weekly program featuring the preparation of food and uses of electrical appliances. Our audience is small but very responsive as evidenced by customer comments, letters and requests for recipes for foods prepared on the program. In addition, we have sponsored such special telecasts as the Gold Cup Motorboat Races, the Sonja Henie Ice Revue, the Detroit Symphony and others.

We believe, that as a medium for reaching the customer with our story of services, television will be of increasing importance as the number of sets installed increases.

In conclusion, I believe that whether we in the industry do anything about television or not to aid in its development, it will grow tremendously in the near future. Therefore, unless we are content to adopt a position of rendering only a curbstone service with respect to television, we must aim our efforts at:

1. Giving the same consideration to television as an electrical appliance that we do to any newly developed application of electricity.
2. Keeping thoroughly acquainted with all television developments, both from its effects on our customers, electrical dealers and our industry.
3. Maintaining trained personnel in our organizations who keep thoroughly familiar with use and service problems created by television so that they can act as liaison representatives between our customers and the manufacturers.
4. Assisting dealers and distributors in the orderly development of the television market.
5. Establishing channels for the exchange of information about television between ourselves in our own industry.

Perhaps some of the indications of the effect of television on our industry about which I have talked, may serve as a starting point for the establishment of guideposts for the direction of our efforts.

Commercial Electric Cooking Conference Scheduled for May 25

A FULL-DAY conference on commercial electric cooking, to be held May 25 at the Madison Hotel, Atlantic City, N. J., has been announced by Harry Restofski, Chairman of the EEI Commercial Division General Committee.

Sponsored by the Institute's Commercial Cooking Committee, the meeting will take place during the National Restaurant Show, which occurs May 24-27. The Conference program has scheduled representatives of electric companies and equipment manufacturers, with several restaurant operators also listed.

On the utility side, the meeting will hear Mr. Restofski outline the importance of commercial cooking load. John Snyder, American Gas & Electric Service Corp., will speak on "Selling Commercial Electric Cooking," and a panel of four commercial cooking specialists will discuss wiring, service and merchandising problems. Luther T. Cale, Chairman of the Commercial Cooking Committee, will describe his group's activities.

Among manufacturer representatives scheduled to speak are Dave Grosshandler, Hotpoint, Inc., on the training of commercial cooking salesmen; A. M. Congdon, Griswold Mfg. Co., who will present new demonstration ideas, and M. P. Duke, President, Duke Mfg. Co., who will stress the importance of industry-wide cooperation in building sales.

Don Nichols, President, Ahrens Publishing Co., will discuss "Restaurant Trends." A luncheon session will hear from S. R. Sperans, President, Nathan Straus-Duparquet, who will discuss the food service equipment house and its responsibility to customers. M. B. Petterson, Procter and Gamble, Inc., will present some new facts on deep fat frying.

"Standard Packaging" Report Heads Purchasing & Stores Committee Meeting Program

A MAJOR feature of the Purchasing and Stores Committee meeting to be held May 9-11 at the Jefferson Hotel, St. Louis, Mo., will be a report of its Subcommittee on Standard Packaging. Under the leadership of Mr. George Balch of the Duquesne Light Co., this group has been making an intensive study of the standard packaging problem as it applies to line hardware.

This study covers more than two years' work and several meetings with utility users, line hardware manufacturers, and container manufacturers. Mr. Balch wants to make it plain that the committee is not attempting to establish standards for line hardware *products*, but is concerned only with standardized methods for *packing* those products.

At the last meeting of the Subcommittee and the other groups concerned, a substantial area of agreement was reached. The report to be presented at the St. Louis meeting will be ready for action by the Purchasing and Stores Committee. Because of the considerable interest which has been shown in this matter of standard packaging it is expected that a sizeable group will be on hand to hear this issue and take appropriate action.

Market Analysis to Build Future Sales

By Maxwell Cole

Philadelphia Electric Company, and Chairman, Industrial Lighting Committee, EEI

A paper presented before the Fifteenth Annual EEI Sales Conference, Chicago, Ill., April 5, 1949

EVERY company's problem of market analysis and development will differ in some degree or other. What may be ideal for one market and its sales development policies, may be far short of ideal for another company in a different area with a different type of customer and with different sales problems. Market analysis must fit the conditions if it is to do its job and produce the desired results. We believe that, for our conditions, it is proving highly satisfactory and we present it here in the hope that our experiences may be of some value to you.

Our market development policies are built around the theory that we must create in our territory the widest possible customer acceptance of electricity and of electrical equipment as the best possible way of doing a job. We attempt to produce the frame of mind where the first thought when a sales or production problem arises is to call us or one of the other members of the electrical industry, a manufacturer, a dealer, or an electrical contractor, to see whether electricity can offer a solution to the problem.

Selling the Whole Electric Industry

We must not only sell ourselves but must sell the whole electrical industry because we believe that our business will prosper directly as the business of the manufacturers of electrical equipment prospers inasmuch as our customers only buy our product after they have bought the product of one of these manufacturers. Until a customer has bought more lighting, more motors, an additional heating device or furnace, or some other piece of electrical equipment, our sales do not increase.

We implement this policy by continuous coverage of the market, by periodicals, direct mail literature, promotional calls, meetings, and all other available media for procuring this acceptance of the "Electric Way."

The first step in planning such a sales program is an analysis of the market as a whole, considering its size, density, the types of industry and business which it comprises, its progressiveness, financial stability, and all the other general factors which give it its character.

In a general picture of our market, you would see that it covers an area of 2,340 square miles in Southeastern Pennsylvania within a radius of approximately 35 miles of the city of Philadelphia, and a small section of Northeastern Maryland. In it there are approximately 3,000,000 people and it probably has as well diversified an industrial and commercial business as exists in this country.

Diversity of Business

There is no predominant industry, nor is it distinguished by tremendous factories such as characterize some localities. Perhaps its distinguishing industrial feature is the large number of small and moderate-sized industrial plants it contains and the diversity of the businesses in which they are engaged. Commercially the metropolitan center of Philadelphia is the hub, but in the area are numerous large towns, some of which might be classified as small cities, each with its own well developed commercial business.

As of December 31, 1948, there were 2,158 large commercial and industrial establishments, that being the number of customers who take primary or high-tension service, and 145,465 smaller commercial and industrial customers taking secondary service. For your information the dividing line between these two lies between 25 and 50 kw of demand because it is at 25 kw that the primary rate becomes available while above 50 kw nearly all the customers have transferred to primary or high-tension service because these rates have become so much more advantageous.

You can readily perceive that the economical and effective promotion of a market of this size requires a careful analysis of its potentialities and a careful direction of effort along productive channels.

Results in such a market cannot be achieved by purely institutional advertising plugging the "Electric Way" nor by generalities in salesmen's contacts. Each prospect must be shown a continuous succession of individual jobs in the lighting, air conditioning, heating, and every other field of application of electricity with the objective that sooner or later one of these specific instances comes to his attention at a time when he is thinking about some problem to which it offers a solution. To that end we use periodicals such as "Electrified Industry" and "Today's Business" covering the general applications of electricity in industrial and commercial fields and specialized pieces such as "Food Service News" or "Electricity on the Farm" aimed at specialized businesses. We supplement these with periodicals produced by our own Advertising Department which use purely local material. Such publications provide the customer with a constant series of illustrations of all the uses of electricity which might be profitably employed in his business.

Seasonal Promotion

There are, however, times when we want to focus the attention of all parties concerned, prospects, our own men, and the other elements of the electrical industry, on a specific application, such as lighting or air conditioning. This should take place at the time when interest in that application is most naturally and easily aroused. Fall, with the approach of dark winter days is the best time to concentrate on lighting, while Spring, when the hot summer weather is coming along is the time to focus attention on air-conditioning. At this time supplementary direct mail literature, aimed at that section of the market which can best use this particular application, brings to a head the interest that you hope has been aroused by your periodical mailings over the past years.

That is also the time to follow up with sales calls on those same customers for the purpose of culminating the entire program in a sale. To accomplish this your own men must talk to the best prospects and the equipment sales outlets must be working in cooperation with you to follow up promptly and efficiently on those cases where the prospect has evinced enough interest to be willing to talk installation with the equipment manufacturer.

During the entire year, of course, our salesmen are carrying on their routine

sales and promotion contacts with the customers. In all their calls they are supposed to be constantly on the alert for new or increased applications of electricity in the customer's plant and to be doing a job of arousing the customer's interest in any way they may find and of generally convincing him of the value of electricity and electrical equipment in his business.

To give you a comprehensive idea of the magnitude of the sales and promotional effort which has to be expended in such a territory, let me point out that there are 147 outside men, which includes both our salesmen and application engineers or specialists, who are contacting the customers in our industrial and commercial classifications in the course of our regular negotiations. During 1948 these men made a total of 182,181 sales calls. This is equivalent to 1¼ calls on each of our industrial and commercial customers. There are, of course, a number of customers in a relatively static position where no calls have been made, so that actually we are probably averaging over two calls per year on a group of customers who make up what might be called the cream of our market.

Periodical Mailing Lists

Then in the program of periodical mailings to our markets, we use 11 different periodicals and have a mailing list of 17,500 names. There are, of course, some customers who may receive two publications, but we are still covering approximately 10 per cent of our best customers with periodicals, of which we sent out approximately 145,000 in 1948.

I have also spoken previously of our campaigns to focus attention on a particular application. During 1948, we conducted eight campaigns of from six to eight weeks' duration, promoting specific applications of electricity such as lighting, air conditioning, and heating, in both the retail and industrial fields. During these activities we mailed 94,316 pieces of direct-mail literature to a list of 42,227 prospects, and these were followed up by 17,860 calls by our salesmen and application engineers. The real prospects for the purchase of new or additional equipment were turned over to the manufacturers who cooperated with us in these campaigns and they resulted in 2,382 sales being closed during the periods of the campaigns. The annual revenue from the campaign was reported as $400,990 and it was estimated that equipment sales by manufacturers, not including wiring and installation costs totaled $4,377,858. It is to be noted that this is only the business for which negotiations were completed during the six to eight weeks' period of the campaigns. There is, of course, a very large amount of business which is opened up in these campaigns for which negotiations cannot be completed within the campaign period, and all such business is a direct addition to these figures.

The figures will give you a good idea of the time, effort, and money which is expended in a sales program of that size. I think this makes readily apparent the necessity for accurate knowledge of the market and close control of the direction of that program if an unforgivable waste of time and money is to be avoided.

Mechanical System Installed

After a number of years of experience prior to the war in trying to prepare our market analyses, mailing lists, and campaign lists by manual methods, the decision was made in 1945 that the first step toward an approach to the post-war market would be the installation of a mechanical system to give complete and accurate classification and analysis. We therefore purchased, and in 1947 installed, an Elliott Mechanical Addressing Equipment System in which we could place stencils for all of the customers to whom we wished to direct our promotional effort and through which we could analyze and classify all of these customers. In this system there are cards on approximately 45,000 of our most active customers who represent the most productive segment of the market on which the bulk of our promotional effort must be expended if it is to be productive.

Basically the files are divided into three parts, one of which contains special lists such as our periodical mailing lists, lists of business and civic associations, etc., which are not a real part of our regular business sections.

The other two are the working sections. The first of these is the so-called Industrial Section which contains the cards on all of our industrial and commercial customers with connected power loads of 25 hp or more. There are just over 4,400 cards in this file and it contains all the 2,158 primary and high-tension customers plus about 2,300 of the larger secondary customers. These cards are separated into 73 business classifications in accordance with the Federal Bureau of the Budget's "Standard Industrial Classification Manual." Incidentally, the number of these classifications gives you an idea of the diversity of the industrial and commercial businesses in this area.

The second main section of the filing system contains 40,800 cards of our smaller retail and industrial establishments. These are also subclassified by business in accordance with the Standard Industrial Classification Manual, but due to the nature of this type of establishment we use only 19 classifications and the great bulk of them are commercial. This group was selected as the result of several years' experience during which all of the customers on the system were surveyed and practically all were called on.

We have established a routine whereby, whenever a large industrial or commercial contract is signed, a special data card is made out by the salesman containing all the pertinent information to go on the stencils. A similar card is sent through whenever there is a change in any of the statistics and the stencil is corrected correspondingly. A comparable routine has been established for retail customers with the difference that the decision is first made whether or not the customer offers sufficient promotional potential to be included in the list.

Selection of Retail List

In determining the names to go into the retail list, several factors are considered. We have made a special effort to provide geographic distribution by providing that a certain number of customers from each important area of the city and each important suburban unit be included. We also make a special effort in these areas to obtain proper distribution by types of customers. This may result in including some not-too-good prospects in a small community and omitting customers who, individually, might be better prospects in a larger community, but we feel that this is justified to give geographic coverage to our promotional effort.

The stencils are always based on the billing address of the customer. In cases where there is a particular individual to whom we wish to mail promotional literature the name is added to the billing address as a "send to." There are some other cases where the company officer who makes the decision is located in a downtown building or even in another city, rather than in the plant, and in these cases an extra card of a different color is made out and carried at the back of the regular customer card file. These special cards are also used where a tenant of a building is in some other business classification than the contracting occupant. An illustration of this

would be a restaurant in a downtown office building, in which case the billing stencil would be in the office classification but the restaurant operator would be on a colored stencil at the back of the restaurant classification.

On the stencil, in addition to the address and the name of any individual, is our own code number, which performs several functions. Primarily it was set up for the purpose of identifying the location in the stencil file of any returned mail so that we could readily locate the stencil and determine why the piece was returned. One part of this code tells us whether it is an industrial or a retail customer, a second part tells us whether or not it is in Philadelphia or in a suburban area, a third gives us the business classification in which the stencil is filed, and a fourth gives us the salesman's code. This latter was added to facilitate separating the customer lists by salesmen for review when the activity is being set up.

Customer Data

Customer data is contained in the selector numbers blocked below the stencil proper. Therefore, as it will appear on the stencil, one block is reserved to identify the service (gas, steam or electric), the rate on which the customer operates, and certain of the more important riders which may be a part of his contract. We recently had occasion to contact all of our high-tension customers on very short notice. By the use of the selector system we were able in a very few hours to run off a card on every high-tension customer on our system. By the use of the code number on the stencil these cards were immediately separated by salesmen and through this procedure we were able to get into each salesman's hands, within 24 hours, a complete list of the customers he was to call on. Prior to the installation of this system we would have had to have gone to our bill files, typed the complete list by hand, and then go through the Division Manager's assignment file, customer by customer, in order to separate them by salesmen. The whole procedure would have taken pretty close to a week.

The second block of numbers tells us whether the customer is on the lines of the Philadelphia Electric Company or one of our subsidiary companies and in what district or division he is located, so that in preparing our lists we can exercise selectivity between geographic areas.

The third block covers existing applications of our services. We do not attempt to list all the applications in each customer's plant but use this as a selective list of customers who have large or outstanding applications. If, as occasionally happens, we want a list of customers in a given industry who have bang-up infrared installations, for example, we can run through that classification and the machine will give us such a list. This can, of course, be done for any desired number of classifications.

The fourth group gives us the good potential customers for a given application and is the one which we use in all of our campaigns.

The fifth block of numbers enables us to take off an individual salesman's assigned customers in the event that we wish to make an assignment to one or more, but not all, salesmen.

In the retail field we use a variation of the salesmen's assignments described above. Our retail salesmen are generally assigned to a specific area with no overlapping, which does occur with our industrial salesmen. So, instead of using the salesmen's selector number, we use the geographic selector numbers. The very large number of customers in this field also makes a further breakdown desirable and we therefore subdivide these customers into four groups. The best one-third are designated and are in turn arbitrarily broken up into three equal sized groups which are labeled A, B, and C. Depending on the time and number of calls or mailings we wish to make, we can cover one-ninth of those customers by picking either the A, B, or C groups; two-ninths by picking two of these groups; and one-third by picking all three. These three groups are usually used as the basis for call assignments while the remaining two-thirds will receive direct-mail pieces only. These groupings are also carefully selected for geographic distribution as well as potential business.

The last of these selector groups are retained for spares for future use.

How Selector System Is Used

As an illustration of the use of this selector system let me run through the procedure of a campaign. We first decide how big a mailing list we want and how many follow-up calls we want to make. With these two figures in mind we review our business classifications to determine the types of business which offer the most fertile field and select enough of them to give us the mailing list we desire. The addressing system then runs off a complete set of cards on these business classifications. These cards are then separated by salesmen and each salesman's cards are subdivided by prospects and non-prospects, in accordance with the fourth group of selector points. These cards are then transmitted to the salesman for review at which time he makes any corrections that may not have gotten on to the stencil by the routine methods; takes out any prospects who have ceased to be good potential because they have purchased equipment since the last activity, because their financial position has deteriorated or for any other similar reason; and also transfers into the prospect list any customers he believes have become good prospects. The total number in his prospect list is adapted to the number of calls he is to have assigned for the campaign. These prospects are then assigned to him for follow-up calls in the campaign while any promotional literature, usually with a return card, is mailed to all the customers in the business classifications.

Results of a Year's Experience

This system went into operation in January, 1948, so we have had just over one full year's experience. That experience has been a pleasant surprise. We knew at the start there were many things it would not do. There were other things we were not sure it could do. Our experience, however, has been that it has done all the things we expected it to do, most of the things we only hoped it would do, and some of the things we did not think it could do. Some of our preconceived ideas as to how things could be done had to be changed and we have had to make some modifications to it and to our system in order to provide the best results. But by and large it has been even more satisfactory than we anticipated.

One girl has been able to handle it during the past year although there have been several occasions when she has had to have part-time help. This condition, we believe, was primarily due to the fact that when it was set up in 1947 there were a considerable number of errors which crept in through inexperience and lack of knowledge, and also due to subsequent changes in usage and procedure. During 1948 we reviewed, in connection with our activities, approximately three-fourths of the cards and have practically all the original errors eliminated, so that going into 1949 the number of changes and corrections should be but a

fraction of those that had to be made in 1948. Some additional help will, of course, still be necessary during the rush of preparation for any large campaign, but by and large we see no reason why one assigned operator cannot keep up with it.

In order to determine the savings, time, and effort which it makes possible we set up a hypothetical comparison between our pre-war manual method for getting up a campaign list and compared it with the time actually taken on a similar campaign in 1948. The work was done in less than one-third of the time in man-hours and the greater proportion of the time saved was that of our salesmen and supervisors which resulted in a cost of approximately 13 per cent of our pre-war cost. To these monetary changes must be added the reduction in the nuisance to the salesmen, who now get a complete list of their customers in the already selected business categories from which they can make a quick decision as to whom they will call on and who will only receive mailing pieces. Previously they had to thumb through their complete list of assignments, which probably were not separated by business categories, and list in long hand the customers they wished to cover. It is an intense satisfaction to management to know that we have been able to completely review our market and make an intelligent decision as to what sections of it we would cover and to know that having made that decision we are getting accurate coverage. We are satisfied that we are getting far greater accuracy with, and results from, our promotional dollar.

It is also of great help to us in analyzing the potential of a new application of one of our services. When we desire to make such a market survey we first study the application itself and its operation. We then make a pilot study of its potential revenue in a few individual plants and determine the extent to which it can be used in various types of business or industry. We can then get from our addressing system a complete list of all the customers in those businesses or industries and, on the basis of our pilot study, estimate the potential load and revenue on all of these plants and then total up its potential to our company.

We have also found it extremely useful in many other ways. For example, in the Spring of 1948, a big manufacturer suddenly decided to bring a travelling exhibit to Philadelphia and gave us just 10 days notice. We were expected to make up the list of guests to be invited to this exhibit and this list had to be highly selective. A few minutes study of our tabulation of industries enabled us to determine the particular ones which would be most interested and would give us approximately the number that the exhibit would accommodate. By four o'clock that afternoon we had a complete list from the addressing system. Without the system we could not possibly have gotten the list inside of three days, and we do not believe it would have had half the accuracy of selection we obtained in this instance. During the past 15 months we have had several such experiences.

As an example of its over-all usefulness let me cite one more set of figures. In the first nine months it was in service we used it for 78 different operations involving 54,885 cards for customer lists for internal use and 127,465 envelopes and self-mailers addressed for customer mailings.

I appreciate that in this paper I have only hit the high spots and there are many details that I have been forced to leave out. I also wish to reiterate we still have much to learn before we realize its full possibilities and that we are also going to find some things it never will do for us. All in all, however, we believe it to be one of the best investments that the Sales Department has ever made. A promotional effort such as I outlined in the first part of this paper involves a large amount of money which must be wisely and accurately expended if it is to justify itself and if the maximum results are to be obtained. We are satisfied that through it we are able to make a far more accurate analysis of our market; to direct our efforts and money along far more productive lines; and we feel confident that the development of our market will be correspondingly accelerated.

L. A. Magraw

LESTER A. MAGRAW, president of the Central Illinois Public Service Company, Springfield, Ill., and a Director of the Edison Electric Institute, died on March 25, 1949. He was 65 years old.

MR. MAGRAW

Mr. Magraw had been most prominently identified with the electric utility industry in Southeastern U. S., prior to accepting, in 1932, his appointment to the presidency of the Central Illinois Public Service Company. He was born in Springfield, Mass., on May 7, 1883, and educated in the public schools of Waterbury, Conn., before attending Worcester Polytechnic Institute, from which he was graduated in 1905.

Mr. Magraw first served the electric industry in the manufacturing firm of Crocker Wheeler Co., Ampere, N. J., from 1905 to 1906. During 1906, he was also an instructor at the Sibley College of Engineering, Cornell University. He was engaged in work on steel development in high-tension electrical transmission equipment for Westinghouse Electric and Manufacturing Co. until 1911 when he transferred to the central station field as chief engineer of the Central Georgia Light, Power and Railways Co. and the Macon Railway and Light Co. In 1912, he became general manager, then was named treasurer and general manager of the company in 1917 and subsequently became executive vice president of Central Georgia Power Co., the Macon Railway & Light Co., and Macon Gas Co.

From 1928 until 1932, Mr. Magraw was associated with the South Carolina Power Co., Charleston, first as vice president and general manager and later as president. He resigned this position to accept the presidency of the Central Illinois Public Service Co. in 1932.

At the time of his death, Mr. Magraw was also a member of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers.

Coordinating the Use of Standard Specifications For Distribution Construction

By David Burns
The Detroit Edison Company

A paper presented before the Transmission and Distribution Committee of the EEI at Cincinnati, Ohio, February 10, 1949

NEARLY all operating companies have some form of standards for construction of transmission and distribution systems. The form in which they are presented, and the extent to which they are used, may vary considerably.

It is reasonable to believe that the most effective use of standard construction specifications will obtain where the various departments involved in their use have had some say in the establishment of the standards. Detroit Edison has found this to be true, and our Engineering Division, which prepares and issues such specifications, makes every effort to coordinate their use with all company activities concerned.

General

I will outline the various steps to be followed from the original planning to the ultimate use of the specifications and try to point out how the interests of various departments are considered at each step. I will then go through the procedure using a specific construction specification and illustrate how we work with the various people concerned.

Preparation

Our first consideration in preparing a set of construction specifications should be—"who will be primarily concerned in using them?" Shall they be written and illustrated for the use of other engineers, or should they be easily read and understood by linemen and splicers? Can some compromise be made on this point? Will it be a bound volume or a loose-leaf book? Shall we make it a large 8½ by 11-in. letter size or would it be better to make it pocket size for convenience in carrying?

To what extent should illustrations be used? Should the illustrations be formal plan and elevation type, or line perspective style, or are photographs more desirable?

How far should we go in explaining why certain construction is used? Should the specifications attempt to explain how to go about the construction?

Let's try and answer some of these questions in the order in which we have asked them.

First, who will read and use the specifications? We believe that they should be understandable by the construction foreman and for that reason preliminary proofs are submitted to the construction department for comments before issuing. When I mention construction department, I refer to the department that constructs, operates, and maintains our lines. Since our construction department operates a very good training school, we are able to use a relatively high level of presentation. In addition, by dividing our publication into different sections we can limit the distribution to those concerned. For example, we have a section entitled "Electrical and Mechanical Data" which is distributed to engineers and estimators for use in preparing field sketches and bills of material, but not given to construction foremen. On the other hand, the construction foreman has a section on construction procedures, safety rules, etc., which is not generally distributed to others. This section is prepared and distributed by the construction department.

Loose-Leaf, Letter Size Book

It will be evident from what I have already said that we prefer the loose leaf system. Its flexibility is so desirable that nearly all companies now use it.

As to size, we changed our Overhead Specifications from pocket size to letter size about 15 years ago. Our foremen indicated a preference for the larger book because they sometimes had difficulty reading the smaller print. Our underground splicers preferred the smaller book and this was used until last year when the underground construction people agreed that the larger letter size would be acceptable to them. The truth of the matter is, the so-called pocket-size handbooks became so thick a man could no longer get one in his pocket.

Style of Illustration

Next, let's consider illustrations. It has been said that a picture is better than a thousand words. Whether this is true or not, there is no doubt that the user of your specifications likes sufficient and adequate drawings. Of course, if construction is contracted out, a more thorough and detailed text is required and should be passed on by the legal department. The accompanying illustrations in such a case might be of the "patent drawing type."

However, if your own construction forces are employed you can please them by writing the text of your specifications in a simple and straightforward manner and using a type of illustration that is most effective. Originally, we used all plan and elevation type drawings. Lately we have added many perspective line drawings and some photo illustrations. The construction people prefer the perspective style and we will gradually increase the proportion of this type in line with our policy of coordinating our work with those involved in its use. The photo type is more difficult and expensive to reproduce satisfactorily and cannot be as readily revised as a line drawing.

Cartoon Illustration

There is another type of illustration that could be mentioned—that is, the "cartoon" type. We do not use this one in our Specification proper but the construction department uses it in the job instruction and safety section.

Now assuming that we have decided on the style of text and type, and quantity of illustrations, how far should we go in explaining why a certain piece of construction is used?

We believe that every man involved in using the specifications is entitled to know why the particular construction

is used, and how best to go about the work of construction, but we do not think that this information should necessarily be included in the specifications. A very thorough job of instruction and training is carried on by our construction department and the Engineering Division cooperates with them for the best coordination of the construction specifications with their training program.

There are instances when the reason for the specification is obvious from the specification itself. For example: When "Tree Wire" is specified in locations where adequate tree trimming cannot be done. In other cases we may add notes in the specifications pertaining to safety, such as a caution note on the handling of capacitor bushings before the capacitors are sufficiently discharged.

The Democratic Approach

Before issuing a new specification, or a revision to an existing one, we circulate a preliminary photostat to those concerned for comments and suggestions. Important changes or new items may involve one or more meetings. In this way better acceptance of our specifications is obtained. It is a sort of democratic process which certainly works very well for us.

One method of procedure on a new specification, which demonstrates the effectiveness of this democratic approach, is the use of scale models. We have a good working stock of one-quarter scale models of line materials. When we have a new idea for line construction, we build it up on the model and invite members of the construction forces to comment or make suggestions. A general foreman, for example, can size up the model of the construction much easier than from a line drawing, and usually comes up with a very useful suggestion. When the construction specification is decided upon in this manner, it invariably receives a ready acceptance in the field.

Photographing Scale Models

An additional advantage of this type of presentation is that the model can be photographed and used in the preparation of the printed specification.

Another point not to be overlooked by the engineer in charge of this work is to maintain an interchange of specifications with a few other companies. Many good ideas and practical suggestions can be found by looking over the publications of other utilities. Most of us feel complimented when something we have originated is adopted by others in the industry.

Coordination when Issuing Revisions to Specifications

When a standard specification is revised, or a new specification is issued, or a new material or method is added, consideration should be given to those affected. Some typical examples of this kind of cooperation are:

1. If a new material item is involved, be sure that it is in the warehouse and that the storekeeper is informed in advance where it will be needed.
2. If you propose new symbols that are to be shown on map records, the supervisor of these records should be consulted before adopting the symbol, and there should also be an understanding as to when and where he is to use it.
3. The nomenclature for new items of line material should be acceptable to those who use it, for example, the construction department, the storekeeper, the property records department, and purchasing.
4. The timing of major revisions should fit in with the training program of the using department. There are certain times of the year when it is easier to take the time needed for training. We schedule two revisions per year for our Overhead Lines Specifications.

Reasons for Revision

We are always amazed at the number of sheets that one of these revisions contains. The reasons for printing them are various. It may be a new item or a change in an item that occurs on several different pages; it may be an idea suggested by a lineman or a foreman or an engineer which was considered worthwhile to adopt—or it may be that a paragraph was reworded because of several complaints that it was difficult to understand. Occasionally we take advantage of these scheduled revisions to correct some misspelled words or poor grammar.

For new items or changes that cannot wait for one of these semi-annual revisions, we issue an advance information specification sheet. On these sheets we have found it desirable to include more of the "why" and "how" of the specification. Later, when this sheet is incorporated in the general specifications, the extra explanations may be dropped.

The best results from the use of standard construction specifications obtain when the field forces are trained to understand and use them.

Cooperation in Training

When we send out one of these revisions, we include the usual instructions as to what old sheets to throw away and a very brief description of the change made. In addition to this, we prepare a more detailed explanation of the "what" and "why" of each change. This has become popularly known as the "long-winded description" but it is well liked, and used to good advantage by our Overhead Lines Department to inform their field forces about the changes. In addition, we work with their training division to coordinate the specifications with their job instruction publications.

When a new item of material is necessary the specification engineer should have the approval of the using construction group before ordering it into standard company stock.

Then the date for issuing the new specification should be coordinated with the delivery of the new materials from vendors. The engineer who has the advance knowledge of materials to be used should not overlook the need of informing the storekeeper in advance as to location and quantities. This same policy of cooperation should be followed when the specification engineer plans a change that will cause an abnormal increase in the use of a particular item of material.

Check on Construction

What is the best method of follow-up to insure the proper use of the specifications? If construction is contracted out, an inspector can be assigned to see that the work qualifies under the contract. However, when the utilities' own construction crews do the work, it is necessary that this phase be carried out in a manner aimed to win continuous cooperation and confidence of the field forces.

The man assigned to check the construction must be capable, considerate and tactful. His reports should be impersonal and constructive. A scientific system of spot checking is all that should

be necessary. From the standpoint of the specification engineer it is not desirable for him to be directly responsible for this inspection, because animosities that might arise from such a plan could retard the utilization of the standards. In our company one or two men in the technical section of the Overhead Lines Department perform this function for overhead construction. A standard form is used and the cooperation of the construction forces has been obtained by thoughtful preparation of the plan and good judgment in its application. The specification engineer has access to these reports, if he wishes, and in addition he can do some unofficial observation on his own account. However, these days it's doubtful if many of us can find time to do much observing of field construction.

Another advantage of these inspection reports is that they frequently bring to the attention of the specification engineer the fact that certain specifications are not specific. The foreman may have misinterpreted a specification because the intent was not clear. Sometimes they bring to light apparently contradictory requirements. In such cases we change the specification, if practicable, or give an interpretation of the case.

At one time, the interpretation of the specification was quite an important function of the specification engineer and he had a contact man in the construction department who passed the rulings on to the field. Now, as a result of continued evolution of the specifications, and cooperation between engineering and construction, we can understand each other without an interpreter.

Operation

One of the most effective features in coordinating the use of our specifications is the work of a small committee of four men—two from engineering and two from construction. Perhaps if I explain how this committee came about, it will be easier for you to understand its function.

We had frequently run into some situations where the construction group and the engineering group were making tests, or conducting investigations, independently on similar matters. This occasionally caused confusion and embarrassment in the departments concerned, so Mr. Howard P. Seelye sponsored this committee of four in order to eliminate duplication of effort and misunderstanding between the two departments.

Besides keeping each other informed of all pertinent ideas and projects being carried on or planned in either department, the committee is able to assign the responsibility for investigations to the department most appropriate. For example, if the matter under consideration pertains to work methods, or convenience of installation of new apparatus, it would be assigned to the construction department. However, if it involves research, engineering economics or design features, it would be assigned to the engineering forces. Progress in either case is reported to the committee.

The committee has wide authority to settle all problems that come to it and has been very effective in promoting good interdepartment relations. You may be interested in the membership of this important committee. It is composed of the Specification Engineer and his assistant from engineering, and the Assistant Supt. and his technical engineer from the construction department. It meets about once a month or at any time upon request of any one of the members who may have a problem he wants decided.

Example of Coordinating Specifications

Figs. 1 to 10 show briefly an example of how we coordinate the preparation and use of a specific standard construction specification. I have chosen a specification for aerial primary cable. It is quite likely that most of the companies represented here have recently prepared

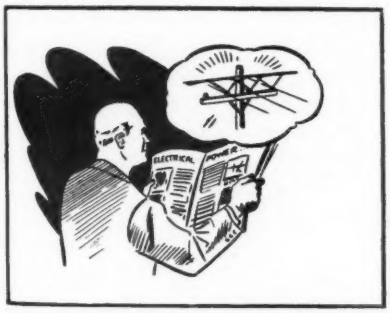


Fig. 1—The Chief Electrical Engineer gets an idea

such a specification. It should be interesting for you to compare our procedure with your own.

The Chief Electrical Engineer has been seriously studying the problem of tree interference with overhead wires for some time, and now evolves a definite plan. (Fig. 1.)

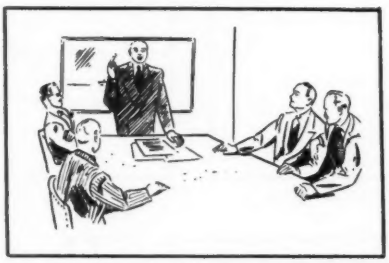


Fig. 2—He talks it over with his staff

He discusses the idea with his staff. They study and prepare general data for approval by management; contact purchasing department, for possible sources of material, etc. (Fig. 2.)

Various methods of installation are tried out, using the scale models. Methods of splicing, cutting, terminating and supporting are studied.

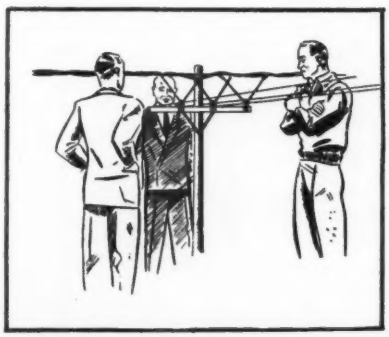


Fig. 3—The Overhead Lines Department men see model of proposed construction

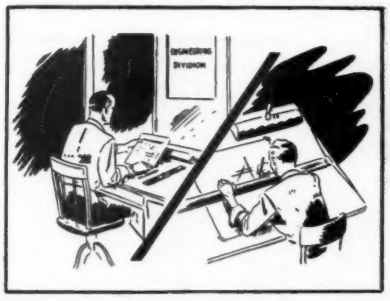


Fig. 4—Specification Engineer proceeds to prepare standard specifications

Overhead Lines Department men are invited to view the proposed construction. Changes are suggested by them for better operating conditions in case of emergency. (Fig. 3.)

The Specification Engineer proceeds to prepare specifications.

He is guided by the recommendations

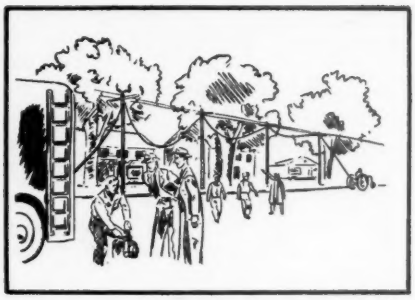


Fig. 5—A visit to a neighboring utility to watch construction

Fig. 6—The specification takes shape, help from others not overlooked

Fig. 7—New material is ordered into warehouse

of the Chief Electrical Engineer, by the suggestions of the construction department and by information available from experience of other utilities. (Fig. 4.)

The Specification Engineer arranges a visit to a neighboring utility that is making its first installation of aerial cable. Takes along members of the Overhead Lines Department, including a general foreman. They have friendly and useful discussions on the field problems concerned. (Fig. 5.)

The construction men we took on that trip, obviously pleased with the preview of things to come, went enthusiastically to work preparing their equipment.

The specification takes shape. The engineer keeps the boss informed and doesn't overlook the possibility of getting help and ideas from others. (Fig. 6.)

Necessary new material is ordered into standard stock. Quantity and future needs are estimated for the benefit of buyer and storekeeper. (Fig. 7.)

Details such as terminology, map symbols must be coordinated. A little thought and cooperation now will save annoyance later on. (Fig. 8.)

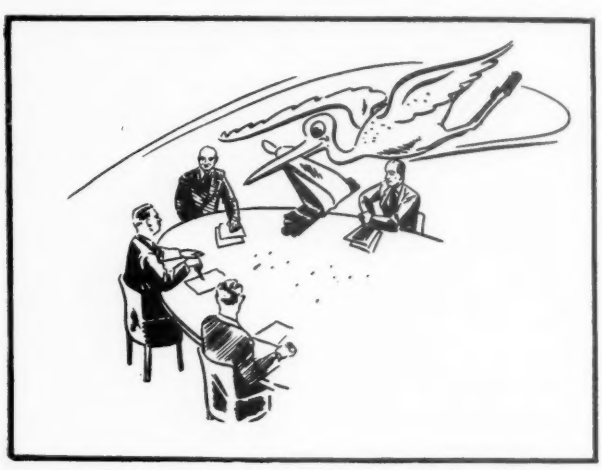


Fig. 8—What shall we name it? Decide terminology, symbols, etc.

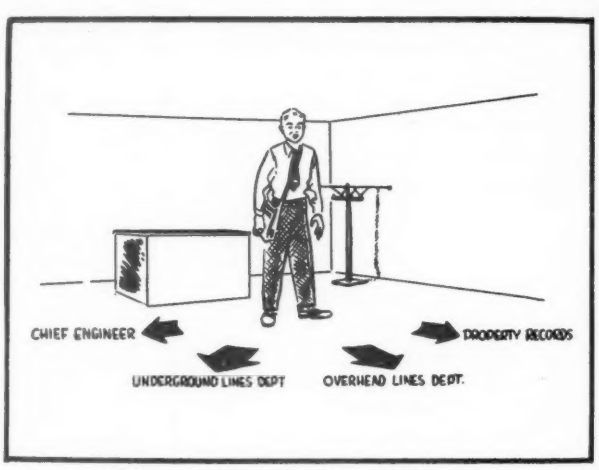


Fig. 9—Copies circulated for final approval.

Photostatic copies of the new specification are circulated to those concerned for final approval. (Fig. 9.)

The big day! One looker for every worker. The Specification Engineer, or his representative, is present to explain, advise, and learn. If he has done a good job of cooperating with all parties in preparing the specifications, future jobs will go along very nicely with all workers and no lookers. (Fig. 10.)

I have tried to show how a democratic approach to the problem of coordinating the use of standard construction practices makes for friendly acceptance, effective use, and higher prestige for such specifications.

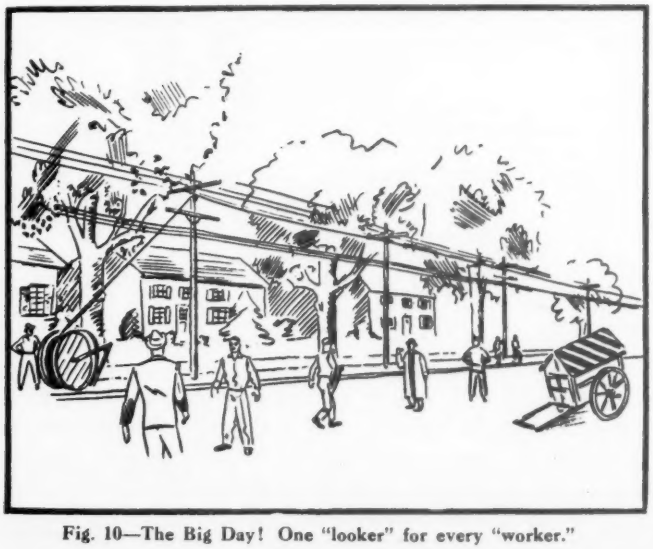


Fig. 10—The Big Day! One "looker" for every "worker."

Recent Inductive Coordination Activities

A Report by the Joint EEI-Bell System Subcommittee on Development and Research

DURING and since the war, the formal inductive coordination activities of the Joint Subcommittee on Development and Research of the EEI and Bell System have been considerably curtailed because of the pressure of other activities and the limited personnel available for this work. However, some studies have been made of specific inductive coordination problems and developments that occurred from time to time during this period.

Supplemental Studies

Many of the situations studied involved types and arrangements of customers' utilization equipment which have not been fully covered by engineering reports of the Joint Subcommittee. Supplemental studies of the inductive coordination aspects of rectifiers, power-factor-correction capacitors and rural joint use were made. The important findings of these studies are briefly summarized in the discussion that follows. It is contemplated that complete reports on subjects not previously covered will be made available in the future.

Electronic Utilization Equipment

There has been a great deal of equipment developed for use in industrial activities utilizing electronic conversion or control of electric power to perform a multitude of functions. Most applications of this equipment are made within large industrial plants or in industrial areas where the power supply facilities usually are of relatively large capacity and seldom are involved in exposures to open wire telephone plant. In such situations the need to consider such loads from an inductive coordination standpoint is infrequent. On the other hand, this same type of equipment is suitable for use by small industrial enterprises located in suburban or rural areas. In these cases such loads may constitute a relatively more important part of the circuit load. Likewise, there often exists extensive open wire telephone plant in these areas. Under such conditions, the effect of such equipment in increasing the inductive influence of the supply system may be important. The discussion below primarily relates to equipment of the type that may be involved in such situations.

Rectifiers

The effect of rectifiers on power system wave shape is discussed in detail in Engineering Reports 22 and 49 and in the "Rectifier Wave Shape Report" of the Electrical Equipment Committee (EEI Publication No. E1). As pointed out in the above reports, when multiphase (24 phase, 36 phase, etc.) operation of rectifiers is employed, the effect on supply system influence is usually minimized.

In the past few years, four installations of 6-phase rectifiers to supply street railways and electrified railroads created situations requiring specific study. In one of these cases, the rectifier units originally were of relatively large capacity and designed for multiphase operation in an industrial plant. When these units were split up into units of smaller kva capacity for use at individual substations, it was impractical, with the available equipment, to utilize more than 6-phase operation. In three of the cases studied, resonant shunts were applied to reduce the inductive influence of the supply system at the rectifier location. The fourth situation is still under investigation.

Radio broadcast stations usually employ rectifiers of significant capacity in their operation. Usually these rectifiers are six phase. In the past, these rectifiers have created inductive coordination problems only in a small percentage of cases. However, in recent years there has been a rapid expansion in the total number of broadcast stations and an increasing tendency for them, especially those of the FM type, to be located in the suburban and rural areas. This, coupled with the expansion of rural telephone service, has resulted in a number of situations where the supply circuit to the station and exposed communication circuits, including the program circuits supplying the radio transmitter, have required consideration from an inductive coordination standpoint. In several cases, resonant shunts to reduce the inductive influence of the supply circuits were applied.

All types of rectifier installations usually can be classified in the planning stages as to their probable inductive coordination effects on telephone plant through an examination of the supply circuit arrangements and the telephone circuit exposure conditions. The report of the AIEE Electronics Committee entitled "Inductive Coordination Aspects of Rectifier Installations," AIEE Transactions 1946, page 417, contains considerable information of assistance in evaluating the inductive coordination aspects of such installations on the a-c side.

The above discussion relates primarily to electronic rectifiers. However, in one situation, metallic rectifiers of the copper-oxide type used in tin-plating operations were studied and found to have effects on the power system wave shape comparable to those of electronic units of the same capacity and number of phases.

Electronic Frequency Converters

Studies were made of two cases involving large capacity (up to 20,000 kva) electronic frequency converters. The normal conversion was from 60 to 25 cycles, but in one case arrangements were included so that conversion could be from 25 to 60 cycles. The effect of the electronic converter on the supply system was quite similar to that which would arise from a rectifier with phase control of equal kva capacity and the same number of phases. In both of these cases, the converters were located at very large industrial establishments served by high-voltage transmission lines, and no inductive coordination troubles were encountered.

Electronic Converter Type of Induction Heating

Three situations were investigated involving the installation of induction heating equipment of the electronic conversion type. This equipment involved a 6-phase rectifier and a circuit to generate frequencies in the order of about 900 to 1100 cycles for heating purposes. The tests indicated that the usual harmonics associated with 6-phase rectifiers were present on the supply system, and in addition, fundamental and harmonic components of the heating frequency

were also prominent. These two factors contributed to a relatively high influence on the supply system feeder.

In the cases studied, the exposure conditions and telephone plant were such that no important inductive coordination problems were involved. However, in one of the cases, the heating frequency disturbed radio reception and an annoying 900 to 1100 cycle audible note was associated with near-by customers' appliances. Series reactors with shunt capacitors were effective in reducing the radio interference and the appliance audible noise.

Electronically Controlled Welding

Straight resistance-type welders do not give rise to important wave-shape distortion. However, they are frequently provided with electronic control which serves to accurately time the portions of each half cycle during which the welder operates. This results in a chopped wave form on the supply system with associated harmonics. Capacitors applied across the low-voltage side of the supply transformer were found to be effective in reducing the influence in one case. In another case, a change in the connection of the load transformer supplying the welder from phase-to-neutral to phase-to-phase, was effective in reducing the supply system influence.

Electric Arc Furnaces

Electric arc furnaces, because of the random operation of the arc during only small portions of each half cycle, distort the wave shape of the a-c supply system. The random operation of the arc does not result in wave-form distortion of the type usually experienced with rectifiers. A large number of harmonics of nearly equal magnitude are involved, and they are difficult to analyze accurately. The distortion results in a characteristic "hash" sound, and this type of disturbance in telephone receivers is particularly annoying. These furnaces are usually single phase. The random nature of their operation is such that operation of three such units on a three-phase basis does not minimize to an appreciable extent the wave-shape distortion. Power-factor-correction capacitors applied at the furnace location proved effective in reducing the distortion in one case studied. Because of the nature and number of the harmonic frequencies created, tuned resonant shunts are not believed to be generally applicable in cases of this type.

Power-Factor-Correction Capacitors

The increasing tendency to apply power-factor-correction capacitors on suburban and rural distribution circuits in recent years has resulted in their being involved in an increasing number of inductive coordination cases. The August, 1938 EEI BULLETIN contains a discussion of the inductive coordination aspects involved in the application of power-factor-correction capacitors. The information contained in this article has been found to be applicable in the situations studied. As discussed in the article, placing reactors in the neutral connection of 3-phase capacitor banks and bonding telephone cable sheath to the power system multigrounded neutral, where present, are methods generally applicable in the relatively few inductive coordination situations where 3-phase banks have been involved.

In one situation, however, combinations of reactors and resistors connected in each phase were found necessary. Where single-phase capacitors are applied near the ends of long single-phase extensions, the inductive coordination effects are more frequently important. The method of treatment of these capacitor banks is somewhat more difficult than in the case of 3-phase banks. Additional studies are being undertaken by the Subcommittee on this phase of capacitor installations.

Induction from Normal Load Currents

Several situations have arisen where fundamental-frequency and third-harmonic induced voltages on telephone plant were sufficiently large as to result in operating difficulties. The telephone circuits involved paralleled multigrounded neutral power circuits, and the induction resulted from normal ground return components of load currents and transformer exciting currents. In one case the load transformers were operated at voltages in excess of normal excitation, thus increasing the harmonic exciting currents. Where single-phase power circuits were involved, normal load currents were of primary importance.

In another case, a 3-phase circuit was involved and third-harmonic transformer exciting currents and load currents were of about equal importance. The 3-phase circuit had a large number of single-phase taps connected to it so that obtaining and maintaining adequate balanced load conditions was difficult. The induced longitudinal voltages ranged up as high as 100 v on subscriber circuits in a 6.5-mile exposure and 250 v on toll circuits in a 45-mile exposure.

In recent years, there has been a trend away from the use of bridged magneto-type ringers on rural subscriber circuits. In lieu thereof, there has been an increasing tendency to utilize grounded ringers to obtain multiparty selectivity. Cold cathode tubes are frequently utilized in the ringer circuit. These isolate the ringer from ground except during the ringing period. This minimizes the unbalance that the ringers would otherwise create and enables up to four parties on a single circuit to have full selective ringing. The 3-element cold cathode tubes presently being used will break down on induced voltages of around 25 RMS volts. A new four-element tube has recently been developed that can be used where necessary for situations involving induced voltage up to approximately 100 RMS volts.

Induced Voltage on Subscriber Circuits

On subscriber circuits which utilize cold cathode tubes to isolate the ringer from ground, induced voltages appreciably higher than those indicated above will cause these tubes to break down with resulting noise in the telephone receiver and in some cases false bell ringing. On dial systems, voltages of the magnitude experienced have also caused interference with ground return signaling systems.

On toll circuits the chief concern from high induced voltages is the possibility of hazard to telephone maintenance personnel, and even telegraph and composited circuits, leased supervisory control circuits and other special services may be adversely affected. It is expected that this type of situation will become more important in the future as loads on rural power circuits continue to grow. The general problem is being actively studied by the Subcommittee in an effort to obtain information leading to practicable coordinating measures.

Rural Joint Use

The development of cold cathode tubes for use in grounded ringer circuits discussed above, coupled with the development of more effective transposition arrangements, as well as improve-

(*Continued on page* 128)

EEI Study Reveals Relationship Between "Peak Loads" and Sales of Electricity

WITH only very minor fluctuations, due largely to the unequal number of days in a month, there has developed a definite relationship between the sales of kilowatthours of electricity and the maximum demands (or "peak loads") upon the power plants, according to a study made by the Edison Electric Institute. For several years, since all-year daylight saving was abandoned, there have been sold, each month, approximately 400 kwhr of electricity for every kilowatt required from generators.

Peaks Parallel Sales, Since 1945

The graphs in Fig. 1 show the relationship between the rated (name-plate) generating capacity of all of the public utility power houses of the United States (both publicly and privately owned), the sum of the noncoincident peaks on these power houses and the sales to the ultimate consumers of electricity each month since pre-war days. The close parallel between peaks and sales since 1945 is very evident. The actual monthly figures and the derived ratios are given by the following table:

All Electric Light and Power Utilities of the United States

Month	1947 Kwhr Sold (Thousands)	1947 Kw Peak (Thousands)	1947 Kwhr per Kw	1948 Kwhr Sold (Thousands)	1948 Kw Peak (Thousands)	1948 Kwhr per Kw
January	18,303,206	44,600	410.4	20,267,417	49,025	413.4
February	17,783,262	43,800	406.0	19,903,528	48,275	412.3
March	17,771,930	43,400	409.5	19,969,400	47,950	416.5
April	17,664,962	43,325	407.7	19,400,000	47,025	412.5
May	17,610,274	43,100	408.6	19,162,732	47,525	403.2
June	17,546,119	43,450	403.8	19,297,128	48,160	400.7
July	17,307,950	44,000	393.4	19,367,345	48,640	398.2
August	18,099,123	44,850	403.5	20,180,485	49,460	408.0
September	18,495,696	45,600	405.6	20,539,207	49,960	411.1
October	18,655,776	46,200	409.1	20,510,530	50,140	409.1
November	18,726,158	48,250	388.1	20,677,615	52,230	395.9
December	19,617,041	49,550	395.9	21,465,106	53,750	399.3
Monthly Average			402.8			406.6

Source: Kwhr sold; as reported as "sales to ultimate customers" each month by EEI. Kw peak; as reported each month for "Class I Utilities" (i.e., those with maximum demands of 10,000 kw or more) by the FPC; extended by EEI to 100 per cent of the entire electric industry by adding 4 per cent to FPC totals.

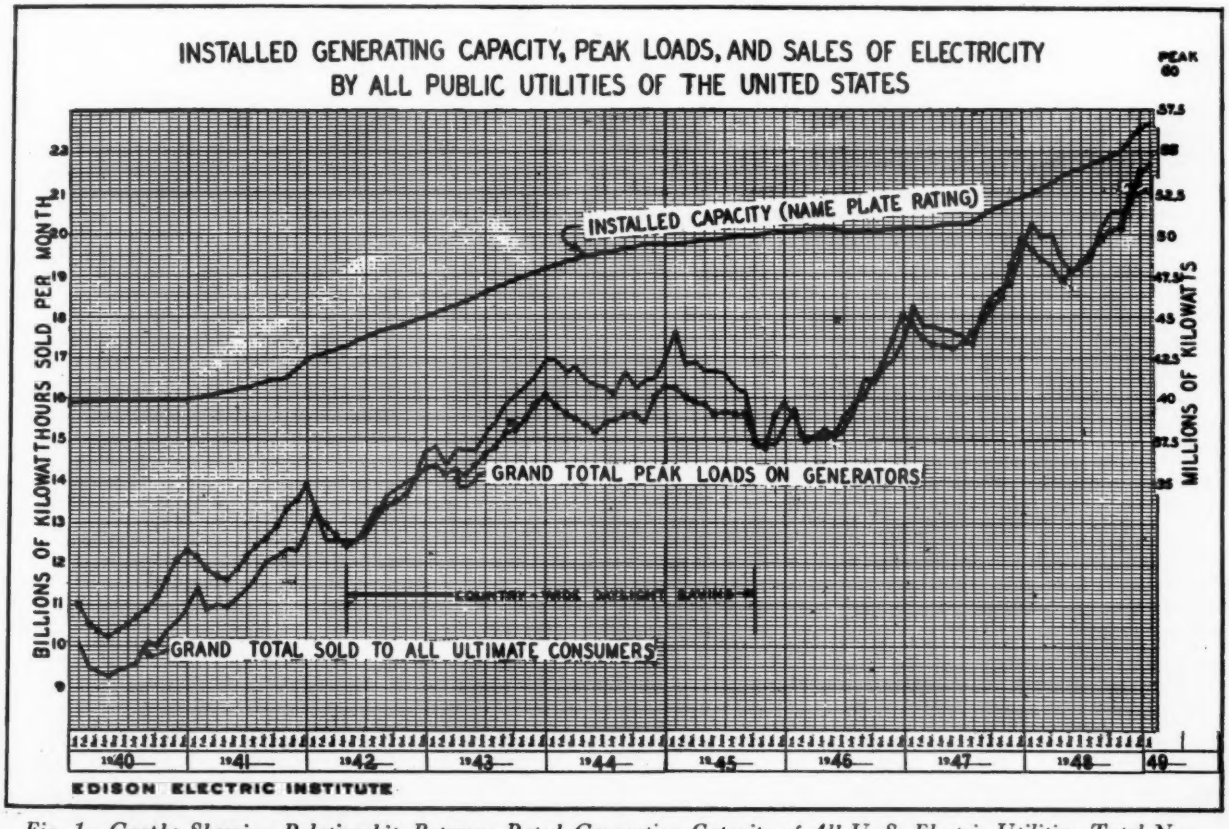
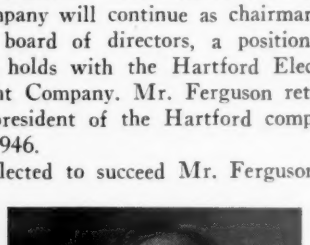


Fig. 1—Graphs Showing Relationship Between Rated Generating Capacity of All U. S. Electric Utilities, Total Noncoincident Peaks and Sales to Ultimate Consumers, Monthly from 1940 to January, 1949

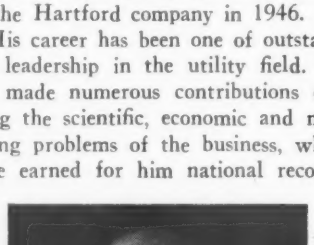
PERSONALS

SAMUEL FERGUSON who has retired as President of the Connecticut Power Company will continue as chairman of the board of directors, a position he also holds with the Hartford Electric Light Company. Mr. Ferguson retired as president of the Hartford company in 1946.

Elected to succeed Mr. Ferguson to the presidency was Executive Vice President ALLAN D. COLVIN.



MR. FERGUSON



MR. COLVIN

AUSTIN D. BARNEY, president of the Hartford Electric Light Co., was elected a director and named to the newly created position of vice chairman of the board of directors of the Connecticut Power Co.

SAMUEL FERGUSON, JR., who has been assistant to the president and assistant treasurer, was advanced to vice president and assistant to the president. JOHN J. DOWLING, New London manager, was elected vice president in charge of the company's gas plants in New London, Stamford and Torrington, and will continue as New London manager.

DR. VICTOR L. BUTTERFIELD, president of Wesleyan University, was elected to the board of directors, and will be a member of the Middletown divisional committee.

Mr. Ferguson became connected with the Hartford Electric Light Co. and the Connecticut Power Co. in 1912. He became president and director of the Connecticut Power Company in 1920, and president of the Hartford company in 1924. In 1933 he was made chairman of the board of the Connecticut Power Co., and of the Hartford company in 1935 and retired as president of the Hartford company in 1946.

His career has been one of outstanding leadership in the utility field. He has made numerous contributions covering the scientific, economic and marketing problems of the business, which have earned for him national recognition. In other business fields, his interests have been many and varied through years of service on industrial, financial and insurance boards of directors.

Mr. Colvin has been executive vice president of the Connecticut Power Co. since 1929. From 1907 to 1909, he was assistant superintendent of the electric department of the Troy (N. Y.) Gas Co. He joined the faculty of Rensselaer Polytechnic Institute in the electrical engineering and physics department in 1909, serving until 1911. In that year he joined the Hartford Electric Light Co. as assistant to the general manager. He became general manager in 1921 and served in that capacity until 1929 when he was chosen executive vice president of the Connecticut Power Co.

Mr. Barney has been President of the Hartford Electric Light Co. since 1946. He has been associated with the Hartford company since 1924 when he was appointed counsel, and became vice president and general counsel in 1936. He was formerly general counsel for the Connecticut Power Co.

Mr. Barney has served as a director of the Edison Electric Institute.

Announcement has been made by the Southern Indiana Gas & Electric Co., Evansville, of the election of two new vice-presidents, A. B. BROWN, vice-president and operating manager and C. K. GRAHAM, vice president and commercial manager.

Mr. Brown has been identified with the Southern Indiana utility for 23 years and has served as general superintendent of the gas and electric operations since 1943. He was formerly identified with the Ohio Edison Company and earlier in his career with the Westinghouse Electric Corp.

In 1930 Mr. Graham was placed in charge of the company's commercial and sales activities. His early experience was obtained with the Springfield (Ohio) Light, Heat & Power Co., now a part of Ohio Edison. Mr. Graham is a past president of the Indiana Electric Association.

WILLIAM B. TIPPY, vice president of the Commonwealth & Southern Corp., N. Y., has resigned as vice president of Southern Indiana.

The election of two vice presidents of West Penn Power Company, HOWARD S. FITCH and JOSEPH O. CHAMBERS, has been announced by President P. H. Powers.

Mr. Fitch has also been elected a director, and will assume full responsibilities for the management of the power department, which was formerly under Vice President Allen N. Cartwright. Mr. Cartwright will continue as vice president and director of West Penn Power Co. and hold his offices in subsidiary companies, rendering consulting and advisory service on technical matters related to engineering and construction.

Mr. Fitch is a 35-year veteran with West Penn, having joined the company in June, 1913, as a system operating engineer. He became assistant system operator in 1916, system operator in 1922, and superintendent of electrical operations in 1925.

Since his promotion to general superintendent of substations in 1930, Mr. Fitch has supervised system planning and engineering, the construction and maintenance of substations, and the operations involved in transmitting electricity from the power station bus bars.

Mr. Fitch is a member of the American Institute of Electrical Engineers, and Engineers Society of Western Pennsylvania; has served as chairman of the

electrical equipment committee of Edison Electric Institute, and is currently vice president of the Pennsylvania Electric Association.

Mr. Chambers will continue his present responsibility for the management of the operating department.

Mr. Chambers started with the company as a serviceman in Pittsburgh in September, 1922. He was transferred to rating and inspection work in 1924, became assistant manager of the department, and in 1926 was named assistant to the commercial manager. In 1931 Mr. Chambers was made assistant commercial manager, and in 1934 became commercial manager responsible for commercial operations, involving customer service, district office operation, rural line program, and the meter, stores and transportation departments. He held this position until his promotion to operating manager last September, which brought him the additional responsibilities of the lines and real estate departments.

ROBERT W. CRANSTON has been promoted to the position of general superintendent of substations for West Penn Power Co.

Mr. Fitch has announced that the power department staff will be as follows: J. E. Thomas, manager of power production, who will continue to be responsible for the engineering, construction, maintenance, operation and efficiency of power stations.

JOHN M. CONNOR, manager of mines, who has been elected vice president of Allegheny Pittsburgh Coal Co. and vice president and director of Windsor Power House Coal Co., will continue to supervise these companies, affiliates of the Power Company, which provide the coal for the Springdale and Windsor Power Stations.

A 29-year veteran of the West Penn organization, Mr. Connor started in March, 1920, as a mining engineer in charge of field work in the development of Beech Bottom Mine, which supplies the coal to Windsor Power Station. In 1927, he was transferred to Pittsburgh and assumed responsibility for the Springdale mine also. He was appointed General Superintendent of Mines in 1934. In his new capacity, he continues his responsibility for all West Penn mining operations.

J. E. FIFE, manager of power supply, has been promoted from the managership of the Northern Division, and will be responsible for system planning and system operation and will supervise the electrical engineering and the electrical construction and maintenance of power stations and substations.

To fill the post left vacant by Mr. Fife, Mr. Chambers has announced the following appointments:

R. W. HURD, Western division manager at Washington, Pa., is promoted to the Northern division managership at Kittanning, succeeding Mr. Fife.

Mr. Hurd, a 21-year veteran, started his West Penn career as a cadet in 1927 after graduating from Carnegie Institute of Technology. He was assistant district manager at Butler from March, 1928, to January, 1930, and then served as district manager at Clarion, Scottdale, Ridgway, and Charleroi before becoming division manager in Washington on July 1, 1948.

D. T. FAUST, district manager at Brownsville, is promoted to Western division manager with headquarters at Washington, Pa.

Mr. Faust, who is a graduate of the Pennsylvania State College, started as a cadet in 1929. After four years as assistant district manager in New Kensington, he became district manager at Springdale in 1934. From Springdale he moved on to the position of district manager at Monongahela, then at Charleroi, becoming Brownsville district manager in June, 1946.

GILBERT D. BURLEIGH, superintendent of West Penn's new Mitchell Power Station, has transferred to the Monongahela Power Co. at Fairmont to direct the work of the West Virginia utility's Power Generation Department.

The new superintendent at Mitchell Power Station is ROBERT E. WEBER, advanced from the post of supervisor of maintenance there.

Program of the 17th Annual EEI Convention Is Announced

(*Continued from page* 102)

Emphasizing the important part that electric utility sales organizations can play in building good customer and community relations, the final speaker, Merrill E. Skinner, Vice President of Union Electric Company of Missouri, will explain the importance of "The Sale We Must Not Lose."

Bringing the session to a close will be "The Constant Bride," a new film now being shown extensively in connection with the All-Electric Kitchen Program.

Following the afternoon business session on each day of the Convention, all delegates will be invited to relax at informal social gatherings. On Tuesday afternoon, from 5 to 7 p. m., Westinghouse Electric Corporation will give a cocktail party at the Hotel Traymore. General Electric Company will be host at a cocktail party at the Hotel Traymore on Wednesday afternoon from 5 to 7 p. m. At 7 o'clock on Thursday evening, an Edison Electric Institute buffet will be offered at the Hotel Traymore. After supper on that evening, there will be dancing and special entertainment attractions not yet revealed.

At noon on Wednesday and Thursday, the ladies will be guests at special luncheons. The first of these, to be given by the Frigidaire Division of General Motors Corporation at the Hotel Brighton, has an added feature, an "aquacade" in the Brighton's swimming pool. The luncheon on Thursday, sponsored by the Atlantic City Electric Company, will come after a tour of New Jersey farm country, and will be served at the Seabrook Farms, world's largest fruit and vegetable processing farm.

Making hotel reservations as soon as possible is the course of action urged on all prospective convention delegates, since the Decoration Day weekend is expected to produce capacity bookings in Atlantic City. After checking in at their hotels, delegates should register promptly at the Convention. The registration timetable calls for registration facilities at the Hotel Traymore from 9 a. m. to noon on Tuesday, May 31; from noon to 5 p. m. at the Convention Hall on Tuesday; and at the Convention Hall from 9 a. m. to 5 p. m. on Wednesday and Thursday. In addition, it will be possible to register on Wednesday and Thursday afternoons, from 12 noon until 3 p. m., at the Haddon Hall Hotel, where the parallel sessions are to be held. The registration fee will be $10.00. The importance of prompt registration is emphasized by the fact that only by registering can the delegate receive his convention badge, by which admittance to the business and social functions of the convention is gained.

"Selling Returns to the Front"

(*Continued from page* 110)

Our most important job at the moment is to get our rate structures properly related to our present and prospective capital structures, and then to plan and execute our selling programs to produce profitable business. The kind of cooperation which I have indicated represents our best hope for sound economic development and I urge this group to take the lead in bringing it about, not only in your own companies but also in the EEI committee structure.

Recent Inductive Coordination Activities

(*Continued from page* 124)

ments in the balance of central office equipment, has resulted in considerable reduction in the susceptiveness of rural telephone circuits. These developments, together with other long-term developments leading to improvements in the inductive influence of supply circuits, indicated that joint use of rural telephone and power circuits from a noise induction standpoint was feasible and often easier to coordinate than comparable lengths of exposure at roadway separation.

A trial installation of rural joint use, about 16 miles in length, was made in 1945 in the vicinity of Selma, Alabama. The noise level obtained in this situation, and other subsequent applications, was sufficiently low that no specific coordinative measures were required.

Detailed information on the more recent developments leading to improved telephone circuit susceptiveness and data obtained on inductive influence and induced noise in rural joint use situations are contained in a paper entitled "Joint Use of Pole Lines for Rural Power and Telephone Services," by Campbell, Hill, Moore, and Scholz, 1947 AIEE Transactions, page 86.

The above summary of the inductive coordination activities studied by the Joint Subcommittee on Development and Research during the past few years emphasizes the importance of continued close cooperation between local power and communication companies so that the number and importance of inductive coordination problems that might require specific study and correction are minimized.

In some cases when loads involving equipment similar to that described are to be served, it may be possible to select an arrangement of feed so that there will be a minimum effect on the influence of supply circuits involved in exposures to telephone circuits. In other cases, advance notice of plans to serve such loads will enable the communication company to make suitable arrangements of its circuits or modify construction plans so that additional specific measures required will be minimized.

In any case, appreciation of the probable inductive coordination aspects of such equipment will enable consideration, in advance, of the coordinative measures required, if any, and thereby minimize the extent and duration of undesirable conditions that might obtain.

CONVENTIONS AND MEETINGS

MAY

1-6	National Electrical Wholesalers Association, Netherland Plaza Hotel, Cincinnati, Ohio.
2-3	Indiana Electric Association, Annual Young Men's Utility Conference, Ipalco Hall, Indianapolis, Ind.
2-3	Chemistry Subcommittee, Prime Movers Committee, EEI, Philadelphia, Pa.
2-3	Transmission and Distribution Committee, EEI, Edgewater Beach Hotel, Chicago, Ill.
2-3	Electrical Equipment Committee, EEI, Edgewater Beach Hotel, Chicago, Ill.
2-4	American Society of Mechanical Engineers, Spring Meeting, Hotel Mohican, New London, Conn.
2-5	Chamber of Commerce of the U. S. A., Washington, D.C.
3-4	Accident Prevention Committee, EEI, Edgewater Beach Hotel, Chicago, Ill.
4-6	Meter and Service Committee, EEI, Hotel Somerset, Boston, Mass.
5-6	Pennsylvania Electric Association, Prime Movers Committee, William Penn Hotel, Pittsburgh, Pa.
9-11	Purchasing and Stores Committee, EEI, Jefferson Hotel, St. Louis, Mo.
9-11	Northwest Electric Light & Power Association, Annual Sales Conference, Hotel Utah, Salt Lake City, Utah.
9-12	Westinghouse Agent-Distributors Association, French Lick Springs Hotel, French Lick Springs, Ind.
12-13	Pennsylvania Electric Association, Transmission and Distribution Committee, Irem Temple Country Club, Dallas, Pa.
12-13	Missouri Valley Electric Association, Spring Accounting Conference, President Hotel, Kansas City, Mo.
16-19	National Fire Protection Association, Fairmont Hotel, San Francisco, Calif.
20	New Jersey Utilities Association, Seaview Country Club, Absecon, N. J.
25-27	Pacific Coast Electrical Association, Inc., Hotel del Coronado, Coronado, Calif.

JUNE

May 31-June 2	ANNUAL MEETING, EDISON ELECTRIC INSTITUTE, Atlantic City, N. J.
20-21	Public Utilities Advertising Association, Netherland Plaza Hotel, Cincinnati, Ohio
20-24	American Institute of Electrical Engineers, Summer General Meeting, New Ocean House, Swampscott, Mass.
22-25	Hydraulic Power Committee, EEI, Shirley Savoy Hotel, Denver, Colo.
23-26	Michigan Electric Light Association, Annual Convention, Grand Hotel, Mackinac Island, Mich.
27-28	Prime Movers Committee, EEI, San Francisco, Calif.
27-July 1	American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J.
28-30	Canadian Electrical Association, Banff Springs Hotel, Banff, Canada

JULY

12-14	American Society of Civil Engineers, Mexico City, Mexico.

SEPTEMBER

11-14	Rocky Mountain Electrical League, Fall Convention, Stanley Hotel, Estes Park, Colo.
16-17	The Maryland Utilities Association, Fall Conference, Cavalier Hotel, Virginia Beach, Va.
16-17	Public Utilities Association of the Virginias, Greenbrier Hotel, White Sulphur Springs, W. Va.
28-30	Indiana Electric Association, Annual Convention, French Lick Springs Hotel, French Lick Springs, Ind.

OCTOBER

3-5	Electrical Equipment Committee, EEI, Schenectady, N. Y.
17-18	Transmission and Distribution Committee, Lord Baltimore Hotel, Baltimore, Md.
25-27	Pacific Coast Electrical Association, Inc., Fall Conference, Hotel Californian, Fresno, Calif.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

E. R. ACKER, *President*.....Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
ELMER L. LINDSETH, *Vice-President*...The Cleveland Electric Illuminating Co., Cleveland, Ohio
H. S. BENNION, *Vice-President and Managing Director*....420 Lexington Ave., New York, N. Y.
K. B. CRUMB, *Treasurer*.....American Gas & Electric Service Corp., New York, N. Y.
MAE B. WOODS, *Secretary*.....420 Lexington Avenue, New York, N. Y.

BOARD OF DIRECTORS

(Terms Expiring 1949)

W. C. BECKJORD.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
W. H. BURKE.....Ebasco Services Inc., New York, N. Y.
H. C. CUMMINS.....Northern States Power Co., Minneapolis, Minn.
W. G. B. EULER.....Pacific Gas and Electric Co., San Francisco, Cal.
A. H. KEHOE.....Consolidated Edison Company of New York, Inc., New York, N. Y.
ELMER L. LINDSETH.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
P. H. MCCANCE.....Duquesne Light Co., Pittsburgh, Pa.
C. E. MICHEL.....Union Electric Company of Missouri, St. Louis, Mo.
ALBERT T. O'NEILL.....Buffalo Niagara Electric Corp., Buffalo, N. Y.
J. W. PARKER.....The Detroit Edison Co., Detroit, Mich.
H. T. PRITCHARD.....Indianapolis Power & Light Co., Indianapolis, Ind.
K. M. ROBINSON.....The Washington Water Power Co., Spokane, Wash.
R. L. THOMAS.....Consolidated Gas Electric Light & Power Co., Baltimore, Md.
WILLIAM WEBSTER.....New England Electric System, Boston, Mass.

(Terms Expiring 1950)

E. R. ACKER.....Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
AUSTIN D. BARNEY.....The Hartford Electric Light Co., Hartford, Conn.
REX I. BROWN.....Mississippi Power & Light Co., Jackson, Miss.
HANCE H. CLELAND.....San Diego Gas & Electric Co., San Diego, Calif.
E. W. DOEBLER.....Long Island Lighting Co., Mineola, N. Y.
J. A. LONGLEY.....Central Illinois Light Co., Peoria, Ill.
H. B. MUNSELL.....Kansas City Power & Light Co., Kansas City, Mo.
R. S. NELSON.....Gulf States Utilities Co., Beaumont, Texas
C. E. OAKES.....Pennsylvania Power & Light Co., Allentown, Pa.
B. F. PICKARD.....Interstate Power Co., Dubuque, Iowa
MCGREGOR SMITH.....Florida Power & Light Co., Miami, Fla.
A. C. SPURR.....Monongahela Power Co., Fairmont, W. Va.
O. TITUS.....Metropolitan Edison Co., Reading, Pa.

(Terms Expiring 1951)

J. T. BARRON.....Public Service Electric and Gas Co., Newark, N. J.
J. M. BARRY.....Alabama Power Co., Birmingham. Ala.
GEORGE M. GADSBY.....Utah Power and Light Co., Salt Lake City, Utah
D. E. KARN.....Consumers Power Co., Jackson, Mich.
J. E. LOISEAU.....Public Service Company of Colorado, Denver, Colo.
PAUL B. MCKEE.....Pacific Power and Light Co., Portland, Ore.
C. B. MCMANUS.....Georgia Power Co., Atlanta, Ga.
S. C. MCMEEKIN.....South Carolina Electric & Gas Co., Columbia, S. C.
GROVER C. NEFF.....Wisconsin Power and Light Co., Madison, Wis.
P. H. POWERS.....West Penn Power Co., Pittsburgh, Pa.
HAROLD QUINTON.....Southern California Edison Co., Los Angeles, Cal.
J. B. THOMAS.....Texas Electric Service Co., Fort Worth, Texas
JOHN T. WARD.....Boston Edison Co., Boston, Mass.
W. F. WYMAN.....Central Maine Power Co., Augusta, Maine

(Executive Committee)

The Executive Committee consists of the following members of the Board of Directors: Messrs J. T. Barron, W. H. Burke, E. W. Doebler, A. H. Kehoe, P. H. McCance, Chas. E. Oakes, P. H Powers, O. Titus and J. T. Ward.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

(Continued)

ADVISORY COMMITTEE

D. C. BARNES...Virginia Electric & Power Co., Box 431, Charlottesville, Va.

E. F. BARRETT.....Long Island Lighting Company, Mineola, N. Y.

S. R. BERTRON.....Houston Lighting & Power Co., Houston, Texas

J. B. BLACK.....Pacific Gas and Electric Co. San Francisco, Calif.

GEORGE H. BLAKE
Public Service Electric and Gas Co., Newark, N. J.

B. F. BRAHENEY.....Northern States Power Co., Minneapolis, Minn.

PRENTISS M. BROWN.....The Detroit Edison Co., Detroit, Mich.

CURTIS E. CALDER.....Electric Bond & Share Co., New York, N. Y.

J. W. CARPENTER.....Texas Power and Light Co., Dallas, Tex.

GEORGE A. DAVIS.....Oklahoma Gas and Electric Co., Oklahoma City, Okla.

SAMUEL FERGUSON....The Hartford Electric Light Co., Hartford, Conn.

J. F. FOGARTY.....The North American Co., New York, N. Y.

H. P. LIVERSIDGE.....Philadelphia Electric Co., Philadelphia, Pa.

E. J. MACHOLD.....Niagara Hudson Power Corp., Syracuse, N. Y.

T. W. MARTIN...Alabama Power Co., Birmingham, Ala.

J. WESLEY MCAFEE.....Union Electric Co. of Missouri, St. Louis, Mo.

IRWIN L. MOORE.....New England Electric System, Boston, Mass.

W. C. MULLENDORE....Southern California Edison Co., Los Angeles, Calif.

A. B. PATERSON.....New Orleans Public Service Inc., New Orleans, La.

W. H. SAMMIS.....Ohio Edison Co., Akron, Ohio

WILLIAM SCHMIDT, JR.,
Consolidated Gas Electric Light & Power Co., Baltimore, Md.

PHILIP SPORN.....American Gas & Electric Co., New York, N. Y.

L. V. SUTTON.....Carolina Power & Light Co., Raleigh, N. C.

R. H. TAPSCOTT..Consolidated Edison Co. of N. Y. Inc., New York, N. Y.

E. S. THOMPSON....The West Penn Electric Co., Inc., New York, N. Y.

J. V. TONER.....Boston Edison Co., Boston, Mass.

G. W. VAN DERZEE.....Wisconsin Electric Power Co., Milwaukee, Wis.

J. R. WHITING...The Commonwealth & Southern Corp., New York, N. Y.

E. A. YATES....The Southern Company, New York, N. Y.

CHAIRMEN OF EDISON ELECTRIC INSTITUTE COMMITTEES (1948-1949)

ACCOUNTING

Accounting Division Executive, ALLAN G. MITCHELL.....Philadelphia Electric Co., Philadelphia, Pa.
Application of Accounting Principles, H. H. SCAFF.....Ebasco Services Inc., New York, N. Y.
Customer Activities, R. G. SCHNEIDER.....Virginia Electric & Power Co., Richmond, Va.
Depreciation Accounting, ARTHUR H. KUHN.....Pioneer Service & Engineering Co., Chicago, Ill.
General Accounting, E. L. CASSADY.....Indianapolis Power & Light Co., Indianapolis, Ind.
Plant Accounting and Records, J. A. RYAN.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Taxation Accounting, J. R. WEGER.....Consolidated Gas Electric Light & Power Co., Baltimore, Md.

COMMERCIAL

Commercial Division General, HARRY RESTOFSKI.....West Penn Power Co., Pittsburgh, Pa.
Commercial Sales Section, C. A. STEVENS.....Public Service Electric & Gas Co., Newark, N. J.
Farm Section, J. C. CAHILL.....The Detroit Edison Co., Detroit, Mich.
Industrial Power and Heating Section, J. R. HARTMAN.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Residential Section, H. A. STROUD.....Monongahela Power Co., Fairmont, W. Va.
Sales Personnel and Training, E. O. GEORGE.....The Detroit Edison Co., Detroit, Mich.
Wiring and Specifications, F. E. DAVIS.....The Commonwealth & Southern Corp., Jackson, Mich.

ENGINEERING

Engineering Division General, E. W. DILLARD.....New England Power Service Co., Boston, Mass.
Electrical Equipment, B. VAN NESS, JR.....Pennsylvania Water & Power Co., Baltimore, Md.
Hydraulic Power, G. R. STRANDBERG.....Stone & Webster Engineering Corp., Boston, Mass.
Meter and Service, H. M. JOHNSON.....New England Power Service Co., Boston, Mass.
Prime Movers, G. C. DANIELS.....The Commonwealth & Southern Corp., Jackson, Mich.
Transmission and Distribution, T. J. BROSNAN.....Buffalo Niagara Electric Corp., Buffalo, N. Y.

GENERAL

Accident Prevention, E. J. KREH.....Duquesne Light Co., Pittsburgh, Pa.
Industrial Relations, C. B. BOULET.....Wisconsin Public Service Corp., Milwaukee, Wis.
Insurance, I. M. CARPENTER.....Ebasco Services Inc., New York, N. Y.
Membership, J. F. FOGARTY.....The North American Co., New York, N. Y.
Prize Awards, H. M. SAWYER.....American Gas & Electric Service Corp., New York, N. Y.
Purchasing and Stores, R. P. SNOW.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Rate Research, S. W. ANDREWS.....American Gas & Electric Service Corp., New York, N. Y.
Statistical, O. E. SMITH.....Consolidated Gas Electric Light & Power Co., Baltimore, Md.
Transportation, LINN EDSALL.....Philadelphia Electric Co., Philadelphia, Pa.
Codes and Standards (a Subcommittee of the Board of Directors), A. H. KEHOE, Consolidated Edison Co. of New York, Inc., New York, N. Y.